Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves
PUBLISHED WEEKLY BY THE TELEPHONY PUBLISHING COMPANY, MONADNOCK BLOCK, CHICAGO

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CHICAGO, OCTOBER 12, 1912

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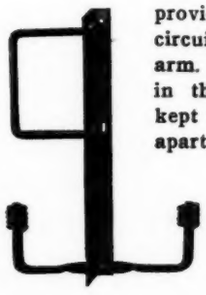

provides an additional circuit below a filled cross arm. Better than knobs in that the wires are kept a good distance apart.

Does not interfere with any work—can be put up or taken down instantly. Not necessary to replace filled cross arms when business increases—just add the Peirce Underhang Bracket.

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SINCERITY AND RESOURCEFULNESS.

The power to inspire belief can only spring from sincerity. No hypocrite ever became and remained a leader.

Resourcefulness under the pressure of circumstances has sent many a recruit climbing over the heads of trained but unseasoned superiors.—Herbert Kaufman.

Popularity of Monopoly Apparently Waning.

In Oakland, Cal., a few months ago, the Pacific Bell bought out its competitor, the Bay Cities Home, as it did in San Francisco and the other communities on the bay. Some opposition manifested itself but nothing effective was accomplished and the merger went through. Today the vision of things has cleared and concentrated itself, as witness the following editorial from the Oakland Engineer:

"The local telephone monopoly, as is customary with monopolies, does not seem to have much, if any, regard for the comfort or convenience of its patrons. Its sole object seems to be to collect its enormous revenues and give as little as possible in return.

"So long as the Home Telephone was in existence and competing with the old company, the latter's service was good.

"But as soon as the Home company was absorbed by the Pacific, trouble began and has steadily been increasing for the patrons of the Pacific, until now there is but one thing that fitly describes the service rendered by it, and that is the inelegant, but apt, word 'rotten.'

"Telephone corporations are public service corporations. They obtain franchises and other privileges from the public in order to serve the public. They are permitted to charge the public for that service, and they should, either of their own free will or under compulsion, serve the public well.

"Under present conditions, the Pacific Telephone company is obtaining money from the people of Oakland under false pretenses.

"There should be, if there is not, some official body, municipal or state, clothed with the power to compel the local telephone monopoly to render decent service in return for the money it charges its patrons. That official body will find a ripe field for investigation and reformation here in Oakland.

"The worse than poor telephone service rendered the people of this city is, as the Enquirer predicted it would be, the result of permitting the consolidation of the two formerly competing companies. The Pacific company, having no competition, is evidently cutting down its expenses and curtailing its ability properly to handle its business.

"What else could be expected from a public service corporation, already staggering under a heavy load of capitalization 'water,' that is permitted to add to the load other millions of 'water' for the purpose of buying out a competing company?

"The 'water' in the telephone company's capitalization represents no real investment. It is created by the printing press, But the public is compelled to pay it, principal and interest, just as if it represented actual money invested by the company's stockholders. It is nothing more nor less than a robbery of the people. They are compelled, by that means, to pay extortionate rates for the service rendered.

"And that robbery is doubled and all the more indefensible if, as in the case in Oakland at present, to the extortionate rates is added the excessible and totally inexcusationate rates is added the totally inexcusable service the Pacific States Telephone Co. is rendering our people."

Another analysis of conditions under a monopoly which recently succeeded competition in the telephone field is given by a prominent journal in a western city. The editor says:

"It is as yet by no means certain that public regulation is to be able to give the public as good and cheap service under the telephone monopoly now established as the city had under competition even with both telephone companies paying liberal divi-

dends. There is more dissatisfaction with the telephone service thus far under a single company than there was before. People cannot but believe that more consideration would be given their complaints and needs if they had recourse to a competitor where the service did not suit them. It is human nature to be arrogant when in a position of power."

From the foregoing it would appear that, despite all claims to the contrary, competition in telephone service has about it something which appeals to the thoughtful man—something which neither regulated, much less unregulated, monopoly can give.

Business Everywhere is Booming.

Ten pages of letters from manufacturers in all parts of the country published in the current issue of the Baltimore Manufacturers Record tell of remarkable activity everywhere and in every line of industry. Summing up these letters, the publication says, in part:

"A rapid expansion in business interests, increasing activity everywhere, factories overtaxed with orders beyond their capacities to fill, a growing scarcity of labor, especially of skilled mechanics, a car shortage, which in many cases is greatly retarding shipments, a shortage so pressing in some cases that one report tells of cement being delivered by the use of passenger cars as well as cattle cars—such is the condition of business throughout the country as voiced by leading manufacturers in every section in letters to the Manufacturers' Record.

Though we are apparently only at the beginning of a period of great activity, and the country is not yet in the full swing of its highest tide of prosperity, traffic is running far beyond transportation facilities. Almost over night there has come upon the country, silently and scarcely foreseen, even by the shrewdest financiers and business men, a marvelous change from inactivity to great activity. The steel works of the country are wholly unable to meet promptly the demand for steel products. Building operations are everywhere delayed by the inability of contractors to secure reinforcing bars for concrete construction and architectural work. Cement manufacturers, who since 1907 have had a hard struggle to find trade, and what they found was generally at a loss, are now overwhelmed with business at advancing prices."

Many of the writers of these letters emphasize the point that, notwithstanding the fact that this is a presidential year, business men are ignoring political problems and are attending strictly to business.

The Brain A Telephone Exchange.

Dr. W. A. Evans conducts a general health department in the Chicago Tribune. A correspondent recently asked him: "Has the size of one's head anything to do with the intellect or the amount of brains? Bumps projecting from either side of the head—do they indicate any extraordinary brightness? Does a bulging forehead indicate a strong memory? Where does the memory brain lie, and where the intellectual brain?"

To the first three questions the answer was "No." To the fourth the doctor replied as follows:

"Some of the functions of the brain are accurately localized; others are not. Memory, as such, has no center. Memory of an act resides in the centers having to do with that act. It is like a man walking in the snow. The tracks are where he walked. Nobody goes around, gathers up tracks, and carries them to a center. Going over things in memory is walking in tracks.

"The brain is a telephone exchange. Its quality depends on the wires which come in, and the perfection with which the different boards are 'hooked up.' A good brain is one with lots of wires running in and out, lots of switchboards, lots of wires running from switchboard to switchboard, and good insulation, so that the wires never cross or ground.

"In the brain the system is partly automatic and partly worked by operators. Most of the operators sit at switchboards over the eyes and up to the hair line. But there are others sitting all around, some at the back of the head, and others right over the ears.

"The quality of the work done by the brain is determined by how well the exchange is organized; how often one gets the wrong number when he rings, or the busy signal when the line is not busy, or a crossed line, or telephone out of order, or an electric shock—these are the things which show a brain to be poor. It is not the size or bulk which means intellectual capacity.

"Bumps on a head would have no more to do with brain work than a bay window on a telephone building has to do with the girl who sits at the board in the exchange of a large telephone system."

This is substantial consolation for some of us, whose bumps never did seem to be in the right places, according to the phrenologists' affirmation. Now, let us concern ourselves no longer with the matter, but, instead, concentrate on modern exchange practice and apply what we discover to the management of such convolutions as we may have in our heads. This with the more zest, as the good doctor is recognized as considerable authority on the human form, even if he is not a telephone engineer. His is a comparison particularly apt for the telephone field.

A Warning to City Governments.

The liability of city councils to take an arbitrary stand against public utility corporations in the matters of rates and service, was the subject recently of an editorial utterance on the part of the Municipal Journal, a conservative and authoritative publication, which, as its name implies, specializes on affairs affecting municipalities. Its comment on the question was, in part, as follows:

"While all cities should realize their powers in this matter and protect their citizens from extortionate rates, or secure for them the lowest possible rates consistent with good service, it should be borne in mind that the courts have invariably, we believe, held that no rates established by ordinance are lawful which do not secure to public service corporations a fair return on the investment.

There are differences of opinion even among the courts as to what is a fair return and what should be included under the head of investment. Both courts and councils should also remember that the majority of public service corporations run at a loss for the first year or two, and sometimes even five or ten, and that they should be permitted to make up for this early loss by larger dividends later on. And it is the part of wisdom as well as of justice to treat the corporations with liberality."

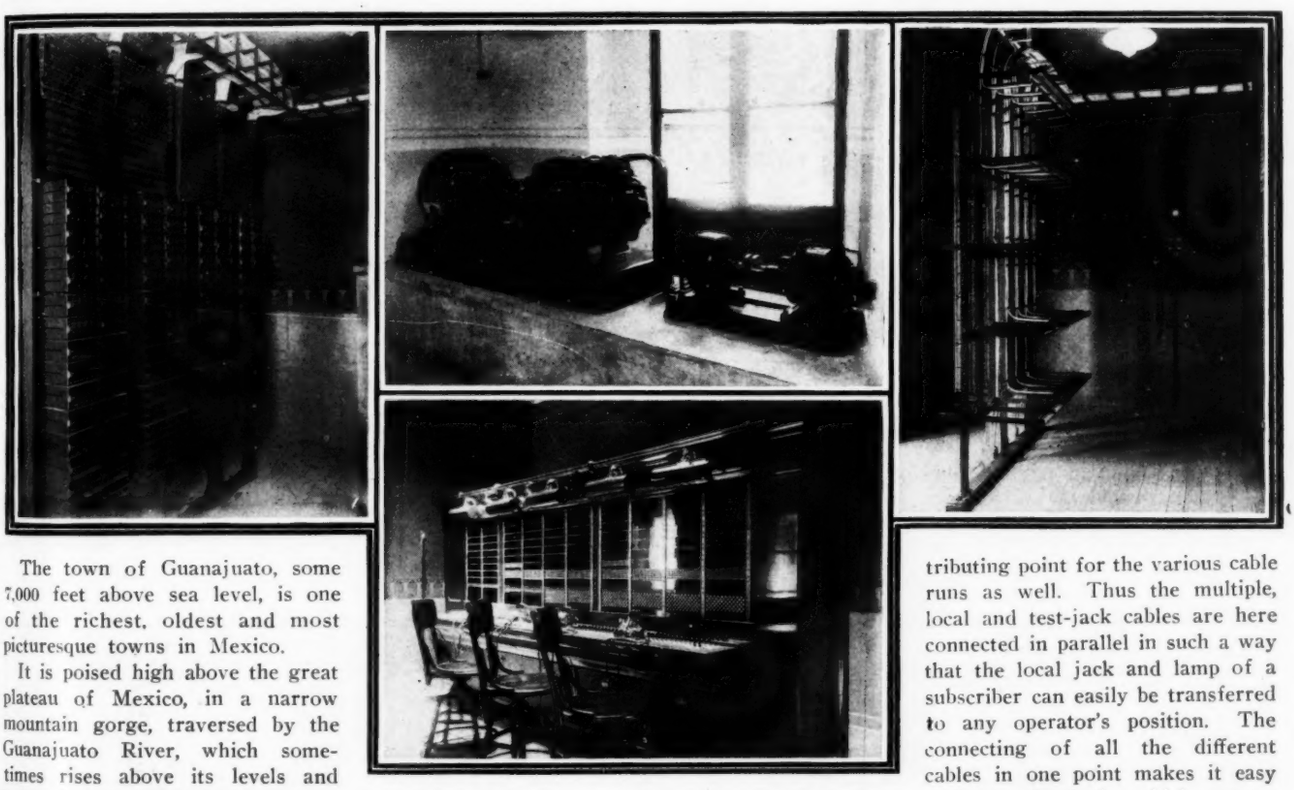
Modern Telephone Exchange in State of Guanajuato, Mexico

Description of System Recently Installed in Towns of Guanajuato and Irapuato, Mexico—Aerial Construction, the Only Type Possible to Use in Former Town—Features of the Exchange Equipment of the Cia Telefonica de Guanajuato

By Helge Rost

In spite of the unsettled political conditions in Mexico during the past year or so, some progress in telephone development has been made. The Cia Telefonica de Guanajuato, which company has a telephone and telegraph concession in the state of Guanajuato, some time ago placed an order for telephone equipment for installation in exchanges at Guanajuato and Irapuato.

Regardless of the revolution and changes in the Mexican government, work has proceeded on the installation of these exchanges and their formal opening has taken place.



Views of Equipment in the Guanajuato Exchange.

The town of Guanajuato, some 7,000 feet above sea level, is one of the richest, oldest and most picturesque towns in Mexico.

It is poised high above the great plateau of Mexico, in a narrow mountain gorge, traversed by the Guanajuato River, which sometimes rises above its levels and brings destruction to both property and people. The situation is wild and striking, the precipitous hills roundabout being dotted with homes, churches, mining shafts, winches, ore dumps, etc. The streets are narrow, crooked and sloping, and certain of them are so precipitous that it has been necessary to pierce them with stone steps.

The group illustration conveys some idea of the town. "La Presa," the big water reservoir at the upper part of the city, furnishes potable water for the inhabitants. The statue of the patriot, Hidalgo, is shown together with some typical scenes in old Guanajuato.

The thought of putting in an underground cable system in such surroundings is absurd. The telephone company thought it wisest to put in aerial cables supported on iron or wooden poles, with distributing boxes at the points most convenient for making a short open wire run to the subscribers' houses.

The multiple switchboards in this exchange have a capacity of 3,000 subscribers. At present the exchange is equipped only for 450 common battery lines and 40 long distance toll lines. In the illustration showing the switchboard it is seen that there are places for five operators, of whom three handle the local traffic and one the toll lines. Besides there is a place reserved for one telegraph operator, as in the near future the company plans to install commercial telegraph service throughout the state, thus competing with the government telegraph service.

Another illustration shows part of the relay racks with the combined intermediate frame, which serves as a distributing point for the various cable runs as well. Thus the multiple, local and test-jack cables are here connected in parallel in such a way that the local jack and lamp of a subscriber can easily be transferred to any operator's position. The connecting of all the different cables in one point makes it easy to locate the faults which eventually may occur in some circuits.

The reader will recognize the main distributing frame with its test jacks and lightning arrester strips, which is shown in another view. The last mentioned are connected singly by means of six 20-pair cables and cable joints to the regular lead covered street cables.

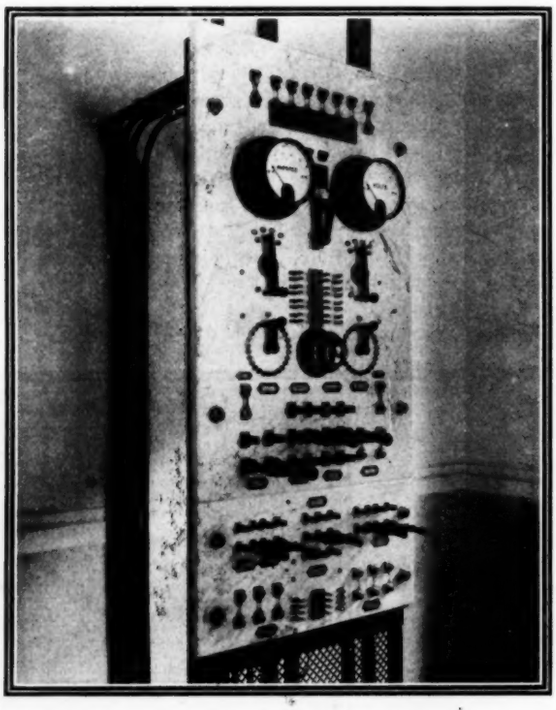
The main frame is made in such a manner that the space occupied by a vertical strip of 120 double lines on the arrester side is equal to the space occupied of 100 test jacks on the exchange side. This arrangement gives for a certain length of the rack and a certain capacity of the test jacks, a proportional larger capacity to the lightning arresters, according to the rules of general telephone practice.

In the background of the same view a wire chief's test set is seen on the wall for classifying and locating troubles.

The power equipment consists of: Two Tudor accumulator batteries, type J-10, each one of 20 volts; and one motor-generator set for charging purposes. The motor is driven from a 440-volt 3-phase alternating current supply lead of

the local power company. For ringing purposes there is a small motor-generator set driven from the 110-volt lighting circuit. A standard Warner pole changer is also installed for use in emergency cases.

The whole installation in Guanajuato, both inside and outside, has just been completed and is working very satisfactorily. The subscribers are greatly pleased with the neat appearance and high talking value of the new type of common battery wall sets which have been furnished.



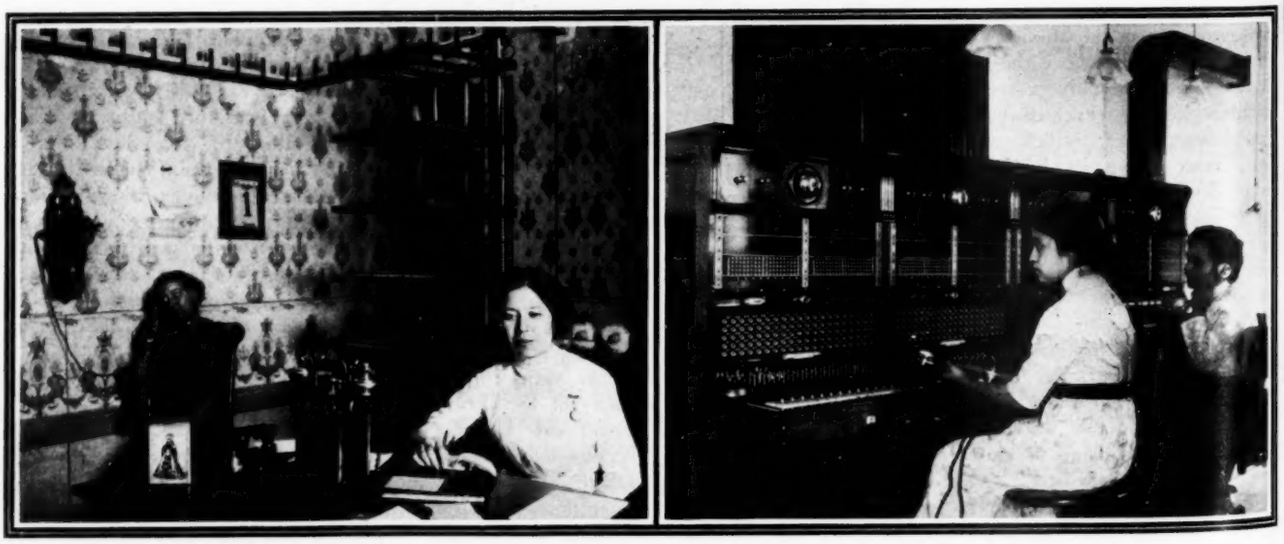
The Power Board in the Guanajuato Exchange.

The Irapuato exchange, located in the town of the same name, which is famous for its strawberries all the year round, is smaller and less elaborate than the Guanajuato system.

The switchboard is of the magneto type with combined automatic self restoring drops and jacks. The multiple has a capacity of 1,200 lines and the board is at present equipped for 300 local and 10 long distance toll lines. The operating is divided among four operators, but as the photograph was taken early in the morning, the slack period, there were only two operators busy. A feature of the switchboard is the small space occupied by the local jacks with their self restoring drops. The clearing out drops are self restoring also, being arranged in such a way that when the plugs sink into their sockets, the drops are mechanically restored to their normal position.

The cross connecting or main frame in this exchange is located in the same room where the long distance calls are registered and business transacted with the public.

The equipment for both exchanges was furnished by Empresa de Telefonos Ericsson of Mexico City, a branch of L. M. Ericsson & Co. of Stockholm, Sweden. The director of "Cia Telefonica de Guanajuato," N. Ponce, has expressed his great satisfaction with all the equipment installed, especially mentioning the clean job and perfect workmanship of both visible and enclosed parts of the apparatus.



The Main Frame and Part of the Irapuato Office—The Irapuato Magneto Multiple Switchboard.

Foreign Telephones from an American Viewpoint.

Mrs. N. D. Baines, traffic manager of the Federal Telephone & Telegraph Company's Buffalo exchange, who won a two months' trip abroad in the recent Buffalo Express European contest, has returned. She reports that her trip was enjoyable in every respect, and gives below an interesting letter on some of her observations in foreign telephone exchanges which she visited:

"During my stay in Paris I visited one of the large telephone exchanges, gaining admission to it through the courtesy of Mr. Thomas, superintendent of the Thomas-Houston Co., who accompanied me to the exchange and also took me to see an automatic installation of 200 lines in one of the department stores.

"The telephone offices in Paris are designated by numbers instead of by names, and the one we visited was number seven. This exchange was equipped with a common battery switchboard of 63 A positions and 34 B positions, carrying 6,300 working lines, with a capacity for 9,000 lines. The keyboards are built very low—hardly two feet from the floor, it seemed to me—and the operators' instrument jacks, instead of being down at the left of the position, as in America and England, are placed on the key shelf at the right, where they are apparently very much in the way. The B positions are equipped for machine ringing, the keys being self-restoring when the subscriber answers. The lines used for the busy signal, which we call the busy jack, on their B boards were marked 'occupation.' The average daily number of A calls is 40,000; B calls 17,000.

"The government controls the telephone service in

France, and I was told that, when once accepted as an employe, one is practically assured of a life position. The minimum age limit is 18 years for operators, and men operators are employed exclusively at night. There were about a dozen men operating on both A and B boards the afternoon I was there.

"The wage scale is uniform throughout France, the annual salary being 1,100 francs, except in Paris, where it is 1,500 francs, or about $300 in our money. The women employes wear long aprons which completely cover their dresses, and nearly all were working with kid gloves on. The discipline in the exchange which I visited was certainly a negative quantity; the operators, both men and women, were chatting among themselves; some were eating candy, while others were chewing gum apparently, regardless of the presence of the monitors.

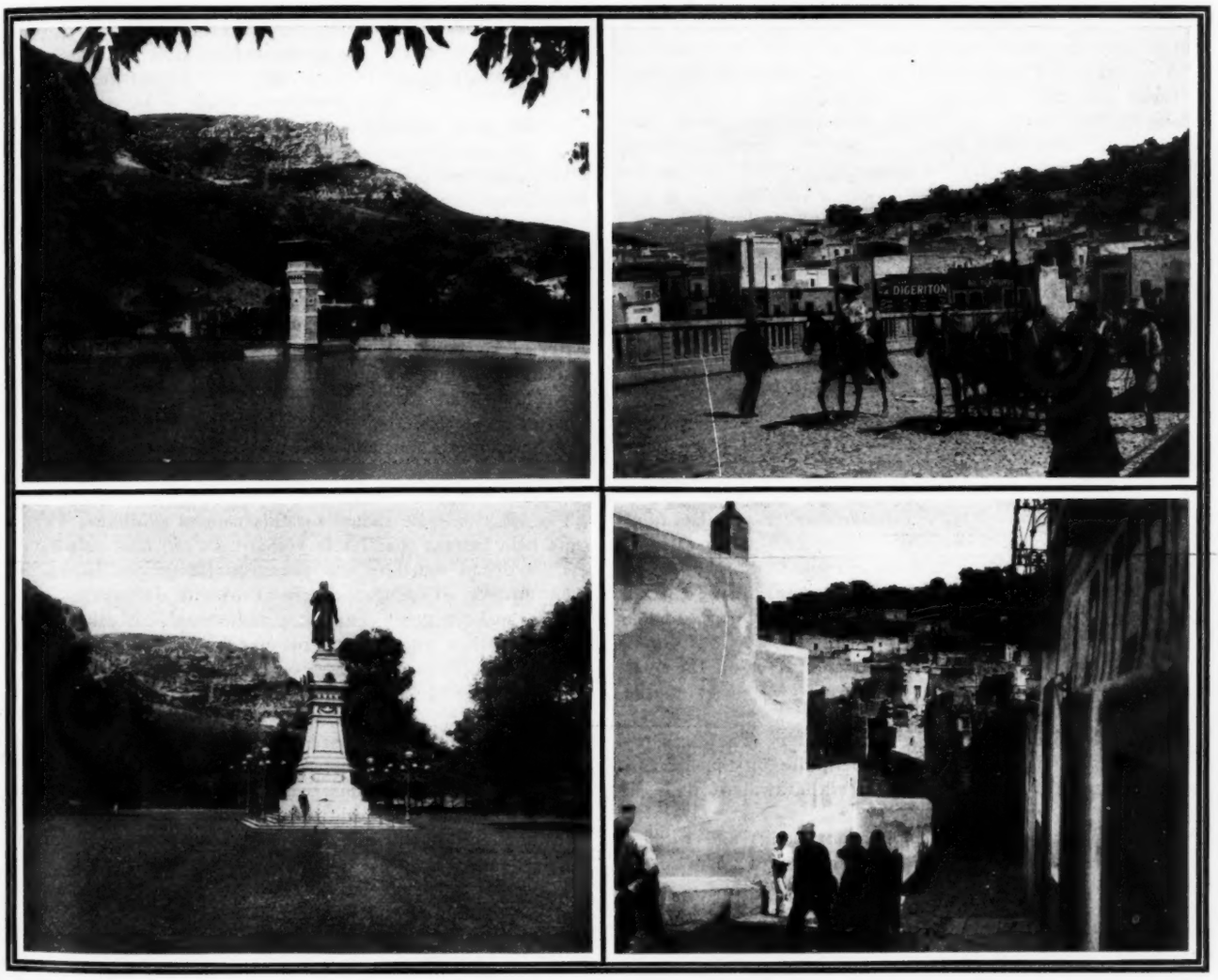
"My visit to the London telephone exchanges was made very interesting and pleasant by G. F. Preston, comptroller of the service, whom I had met when he was making a tour of inspection of American exchanges. I was accompanied to several of the largest exchanges by Mr. Webb, of the traffic department, and, after spending the morning in this profitable way, had luncheon with Mr. Preston at the Trocadero. In the afternoon I visited Gerrard, one of the National company's largest exchanges, which is equipped with a full multiple board of 106 A positions and 44 B. The answering jacks are multipled on three sections, for the purpose of handling unusually heavy traffic quickly. The A boards are equipped with 17 pairs of cords and are in four colors,—red, white, blue and black. The B boards have a minimum of 28 trunks, all keyless boards, having from 30 to 36 trunks. This switchboard has a maximum capacity of 10,400 lines, with 9,000 working. The peg count of November, 1911, showed a total of 127,712 originating calls and 11,607 B calls. This exchange requires a force of 240 operators, 11 monitors, 15 division supervisors, three senior supervisors and one supervisor in charge. A traveling supervisor for private branch exchange inspection is also employed.

"Central exchange, one of the largest in London, has a switchboard capacity of 12,000 lines, the A positions being without multiple, with B positions of the keyless type.

"In London the long distance department is called the trunking station, and the average number of 'trunk calls' per day is about 20,000. This traffic is handled over 500 circuits and requires a force of 280 operators and 35 supervisors, 17 men being employed at night; in addition, there are a number of clerks who receive complaints, who are called 'fault monitors.'

"My visit to the training school was necessarily brief, but very interesting. While there I had a talk with the young woman superintendent, who accompanied me through the different departments, and explained the course of instruction to me in detail. Students are obliged to remain in the school five weeks before being assigned to positions in the exchanges. The minimum age limit for operators is 16 years and the maximum is 19 years.

"The London telephone area is 640 square miles, and the business is handled through 73 exchanges. The average daily traffic is one and a half million calls and, although the general postoffice department, which is controlled by the government, has taken over all of the National company's plant and is making numerous changes and amalgamations, the service was not bad."



Some Views in Guanajuato, Mexico, Showing the Reservoir Above the City and the Statue of the Patriot Hidalgo.

Reforming the Other Fellow

An Ancient Habit—Our "Holier Than Thou" Attitude

By J. C. Kelsey

An exceptional cat made great inroads upon the mice. All the mice agreed that some one should put a bell on the cat. He needed reforming badly.

But no mouse could be found who would undertake the job.

The other day a real nice, young man rented a Chicago building. He was surprised to find that the windows were painted wtih the magic word "Bank."

So he started a bank—a private bank. And people came hurriedly with their money.

Like 99 per cent. of the human race this nice, young man lost ground rather than gained it and, of course, he failed. Rather, the depositors did the failing.

So the big Chicago banks got busy and deplored the private bank.

The private bank must go or it must be supervised. In other words, private banks must be reformed. They have more privileges than state and national banks.

It became the general idea that they must put the bell on the private banks. So the bankers met at Peoria to talk it over. And the question of submitting to supervision came up.

What did the valiant Chicago banks do? They did not vote at all. What a fine example of moral courage!

Just a few weeks before, a Chicago banker was bewailing the cowardice of politicians. He sadly said the politicians were afraid to act on the Aldrich currency bill.

Yet he sent his representative to Peoria to refuse to vote upon a vastly more important subject—to subject private banks to some state supervision.

But, like the politicians, he was afraid to act on the question of private banks.

Now what was the reason he was afraid? The foxy private bankers of Illinois merely served notice on the big Chicago banks that they could expect a withdrawal of their accounts.

This frightened the poor, helpless city banks and when it came to a vote for supervision those valiant defenders of our country's faith refused to vote.

Surely this was one of the rankest exhibitions of cowardice ever known. It ranks with General Hull, who weepingly raised the white flag at Detroit without firing a shot.

I confess to a considerable contempt for the banking profession, especially the large city banks.

You know that banks are the backbone of respectability and the Gibraltar of local advice. Your banker always lives in the best house and your children speak in whispers as his red automobile goes by. Widows consult him and orphans have him thrust upon them as guardian.

Your mother's dearest wish was to enroll you in that rock-bound sepulchre of horror, and you escaped.

The whole scheme is reversed. The slave is driving his masters. Some day the masters will revolt, and you will see the banks put back in their place.

What tickled me was the true exhibition of human nature at Peoria. The private bankers did not want to be supervised, but they did want a blue sky law.

Not willing to be supervised themselves, they ask for a law compelling every institution selling securities to be supervised by them.

I believe in blue sky laws, but I dispute the ability of the average banker to judge a security properly.

It is always human nature. The Pharisee thanked God he was not like other men. And he felt above reproach. But the rest of the world was in an awful fix.

Even charity should begin at home. But it never does.

In our tariff contentions we want to reform the other fellow. He gets protection and makes us pay for it, too.

We want his product on the free list, but have abundant reasons why our own product needs it.

We object to the high cost of clothes and the lack of wool in them. And we proceed to reform the tariff on wool.

It is the other fellow always who is wrong. The beam is in his eye, not in ours.

And it proved to be in our bank convention at Peoria. After making big noise for months for reforming the private banks, and calling attention to their wickedness, the bankers get cold feet and refuse to vote.

After deploring the cowardice of politicians, they deliberately turn around and reveal one of the fattest yellow streaks in history.

I confess to some shame for this painful exhibition. Yet, I can't help but say that I told you so.

I have had much to say about our large city banks, and their attitude of being the keepers of our destiny.

They make a great roar when some depositor asks a small favor, but they whine like a sucking dove when private banks tell them where to get off.

The act of refusing to vote on the question of private bank supervision might be classed as conservatism. But there is absolutely no difference between conservatism and cowardice.

You would find that conservative people are cowardly people if you could analyze their inner natures. Conservatism and fear are twin sisters and they have done the world considerable damage.

Conservative people have burned other people at the stake and have buried them alive.

When a man tells me he is conservative, I put him down as a craven-hearted coward.

True conservatism has its own meaning. But the word has been wrongly and viciously appropriated.

As far as I can see, there is no great difference between a private banker and a supervised state or national banker.

No chain is stronger than its weakest link. No bank is stronger than the judgment of its manager.

If his judgment is good, the stockholders or owners win. If his judgment is bad, or if he gets to gambling on a stock exchange, the depositor loses.

It is the great game of heads, we win, and tails, the depositor loses.

The game of reform is an old one. Aesop tells of the fox which lost his tail in a trap. The ambition of that tailless fox forever afterward was to eliminate tails from the entire fox race. The tailless fox was a typical reformer.

Later George Ade tells of the politician who addressed the graduating class. Every young chick was going to reform the world and take a smash at the money power.

Finally the politician said he would go in for reform if there was anything in it for him.

I believe the world is gradually reforming itself. It does not need the professional holy man and woman, who constantly cry their virtues from the house top.

Another reform is demanded by a Chicago man. He is a minority stockholder in an elevated railway. He objects to the road selling $25,000,000 worth of perfectly good bonds for $20,000,000. He objects to having $5,000,000 deliberately filched from the railway of which he is a stockholder.

It must be discouraging to certain financiers to see a tendency toward reform along this line.

It has heretofore been considered good taste for the majority to do as they pleased with the finances of a corporation.

Surely a minority stockholder has an awful nerve to protest against such an innocent move as selling perfectly good bonds to themselves at eighty cents.

I will wager you will find considerable indignation among certain astute gentlemen that a low-browed minority holder should object to a perfectly legal transaction.

The only reform possible in this direction is for every minority stockholder to immediately become a majority holder. Then he could share in the loot, too.

The whole world is divided into two parts—those who can get it—and those who can't—wet or dry—hot or cold.

No wonder bankers favor the Aldrich currency bill. No wonder politicians are afraid to push it. There are too many on the side who can't get it.

It seems to me that any currency bill which makes currency so easy as shown in the Aldrich bill is dangerous—at least, to the dear public.

No wonder the large city banker is indignant at the politician. You never heard of a big banker fighting for anything. He calls himself conservative—let the other men fight.

As I write, I am at my old home in Kansas. I have nothing to do but walk up and down Main street and listen to candidates and voters.

In Kansas you find the most active germ of reform. Here you find the human race everlastingly in advance.

As near as I can find out, Kansas wants the following:

First of all, the head of the New York Stock Exchange. Then it wants the price of corn, wheat, beef, pork and hay doubled. Then the cost of automobiles, clothing, farm machinery, coffee, sugar and such cut in two. Then would happiness reign in Kansas.

To me, the Kansas people have run across a difficult problem. Just how the consumer can get lower prices, and at the same time the producer get higher prices, I am unable to explain.

In fact, ever since I came, I find myself trying to be lifted up by my own boot straps.

It does not concern Kansans at all to have the price of coffee, sugar and farm machinery cut down. It suits them exactly.

Oh, it only proves that everything besides the telephone is a local issue.

Talking about local issues, we have a new one in England. It seems that American automobiles are invading England.

How we have shivered heretofore when some campaign orator thundered at our devoted heads about the hordes of cheap labor invading us.

How we applauded when our dearly beloved workingmen (in election time only) were told of the shielding love and protection of a tariff.

Yet we find that our cheap and deadly automobile is disturbing the hitherto unruffled Englishman.

What are we to believe anyway? It's enough to make us nervous.

Getting back to the Kansas man, I can't see why he has such a feeling against the New York Stock Exchange. He don't seem to know that Philadelphia, Chicago and other cities have exchanges too.

Every one seems to have some vague idea of striking at the money power.

Every act of God is ascribed to the money power—rain, drouth and all.

It seems to me that the decent thing to do is to order the members of the New York Stock Exchange taken out and shot.

Seriously, it would be a national calamity to do away with it. And you can bet that Kansas would be hit as hard as any one.

So the germ of reform goes marching on. We are our brother's keeper. We must look after the mote in our neighbor's eye.

Human nature is the slow moving institution which needs reform. It should begin at home.

I saw a great deal of human nature here last week. A group of property holders petitioned the council to put a sidewalk along my father's place—the long side.

Naturally he called attention to the fact that the six consecutive blocks south had but one sidewalk and it was on the other side of the street.

The city council accordingly ordered the walk built on the other side of the street.

Immediately the petitioners for a sidewalk on my father's side became remonstrators against the order for a sidewalk on their side.

What's the use anyway? Bankers are not to blame. They are merely human. They see nothing but the banker's side of it.

The national and state bankers believe in supervising private banks because it gives them certain advantages.

Yet it was human nature to refuse to vote for supervision because it would hurt their business to lose the deposits of private banks.

Judas Iscariot did practically the same thing. But he was too cheap. That is really why we despise him so much.

He was merely the treasurer of the apostolic crowd. And it took money to take care of thirteen men. Don't blame him for looking at the thing from the money standpoint. That was his training.

How will it be settled? The farmer wants more money for his products. He claims he is losing money.

The manufacturer wants more money for his products. He claims he is losing money.

The trust wants more money for its products. It claims it is losing money. The unproductive load is mounting upward.

The laborer wants more money for his product. He claims that it is costing him more to live than he receives.

Who is the prophet who will solve the problem by smoothing out this 180 degree discrepancy?

He who does it must do more than turn water into wine, to make the blind see, the deaf to hear, and the lame and halt to walk.

He must do more than raise people from the dead. He must achieve the impossible. He must eliminate selfishness. And it is easier to move a planet from its orbit than to make the human race free from selfishness.

It is my firm belief that it is still a case of the devil getting the hindmost man. It is still the old story of few men accomplishing and many men failing. It can't be explained.

Just what place the human race has in the great celestial plan no one knows. We are rushing on to something we know nothing of.

Why we are here today and gone tomorrow; you and I can't tell. It is a bigger problem than currency reform, you can bet on that. But don't take it too seriously.

MORAL: A reform should begin at home.

Wisconsin's Comment on Interstate Accounting Plan

A Memorandum Submitted by the Railroad Commission of Wisconsin to the Interstate Commerce Commission, Bearing Upon the Proposed System of Uniform Accounting for Telephone Companies Which that Body is Preparing

This memorandum relates to the application of the tentative classification of accounts for telephone utilities, embodied in Accounting Series Circular No. 30, to the needs of the Railroad Commission of Wisconsin. It is an elaboration of certain suggestions made at a conference with the accounting officers of the commission, held at Washington, D. C., on June 7 and 8, 1912, setting forth the relation of uniform accounts to the regulation of local rates and service. The submitted adjustments in the tentative classification made at that time were taken under advisement, and a request has been subsequently received, under letter of June 13, 1912, that a statement of views regarding the proposed accounting classification be brought to the attention of the Interstate Commerce Commission.

The points concerning which inquiry is made, relate specifically to the effect of the proposed schedule of accounts upon the work of the Railroad Commission of Wisconsin and the necessity, if any, of requiring reports from telephone companies in addition to those made available under the proposed scheme.

Our statement has been purposely confined to the more general principles involved rather than to differences of opinion as to accounting terminology or to the grouping of minor expense items in the separate accounts. References to page and account numbers relate to the printer's proof dated June 5, 1912.

I. Interest of the Railroad Commission of Wisconsin.

The Interstate Commerce Commission and the Railroad Commission of Wisconsin have separate jurisdiction over the accounts of telephone utilities operating within the state of Wisconsin, the former in the interests of regulation of interstate business; the latter in the interests of intrastate regulation. (Act to regulate commerce, as amended June 18, 1910, sec. 12, 20. Laws of Wisconsin, 1907, ch. 499, sec. 1797-m, 8 to 19.)

The jurisdiction of the Interstate Commerce Commission, with respect to what shall constitute the accounts of the undertaking, is not restricted to interstate business. The federal commission may require information from any common carrier participating or likely to participate in interstate commerce. Such jurisdiction is implied in various decisions of the United States supreme court reviewing the scope of inquiry of the Interstate Commerce Commission. A more definite ruling is that contained in a recent case, Interstate Com. Comm. et al. v. Goodrich Trans. Co., involving the jurisdiction of the commission to prescribe accounts and require annual reports of a lake transportation company, the larger portion of whose business is intrastate. The opinion of Justice Day in that case states:

"It is a mistake to suppose that the requiring of information concerning the business methods of such corporations, as shown in its accounts, is a regulation of business not within the jurisdiction of the commission, as seems to be argued for the complainants. The object of requiring such accounts to be kept in a uniform way and to be open to the inspection of the commission is not to enable it to regulate the affairs of the corporations not within its jurisdiction, but to be informed concerning the business methods of the corporations subject to the act that it may properly regulate such matters as are really within its jurisdiction. Further, the requiring of information concerning a business is not regulation of that business. The necessity of keeping such accounts has been developed in the reports of the commission and has been the subject of great consideration. It caused the employment of those skilled in such matters, and has resulted in the adoption of a general form of accounting which will enable the commission to examine into the affairs of the corporations, with a view to discharging its duties of regulation concerning them." [1912]—(32 Supreme Ct. Rep. [1912] 436, 439, 440.)

The proposed classification, accounting series circular No. 30, is designed to apply to all telephone business, whether of an interstate or intrastate nature. Moreover, practically all telephone companies will be subject to the jurisdiction of the federal commission as regards prescribed statistics and accounts. This is evident from the broad scope of the act to regulate commerce, implied in the conference ruling No. 305, March 13, 1911.

"305. Application of the Amended Act to Telegraph and Telephone Companies.—(a) Each and every telegraph and telephone company which transmits messages over its line or lines from a point in one state, territory, or district of the United States to any other state, territory, or district of the United States, or to any foreign country, is subject to the provisions of the act.

(b) If a telegraph or telephone company, the line of which is wholly within a single state, territory, or district of the United States receives a message within such state, territory, or district of the United States for transmission to a point without the state, territory, or district of the United States, which it transmits over its line to another point in the same state, territory, or district of the United States and there delivers it to an interstate line for transmission to destination, the first named company by virtue of its participation in this transaction, is not made subject to the provisions of the act; unless there be an arrangement between that company and its connection for through continuous transmission of such messages, in which latter case all of the

(*Continued on page 570.*)

Practical Telephony for the Practical Exchange Manager

The Fourth Installment of a Series of Articles Relating to the Management and Operation of a Moderate Size Exchange—Discussion of the Various Types of Ringers and Generators—Some Circuits for Special Farm Line Service

By H. R. Van Deventer

A study of Fig. 1 shows that practically all of the business of the proposed company will be rural lines. There will be some single lines in the small towns, but the bulk of the business will be country traffic. Before attempting to plot the territory, it is well to consider some modern methods of giving service. These have an important bearing on the number of lines to be built, their direction, etc.

In planning the equipment, uniformity should be observed. This is vital if operating expense is to be kept at a minimum. It does not mean the exclusive use of any one make of equipment throughout the system, although in each town or section it would be better to have only one make. It does apply to the use of ringers of standard resistance, a standard type of instrument so that all instruments in the system will be interchangeable, and to a standard of efficiency to which all instruments must conform.

It is often considered of great advantage to use series telephones for single line service, because these cost 50 cents to a dollar less than the corresponding bridging set. But series instruments should be avoided on account of operating difficulties incident to their use, difficulty in disconnecting, etc., as will be discussed later. The main obejction from a maintenance point of view, to the series instrument is the fact that it requires a different ringer from the bridging sets which must be used for the country lines. Thus two kinds of ringers must be kept in stock at additional expense and trouble.

A standard ringer resistance should be decided upon for every telephone in the system. I recommend 1,600 ohms A 1,600-ohm ringer of any standard make is usually more efficient and satisfactory than a ringer of any other resistance.

In designing ringers for bridging, the majority of manufacturers made the spools to take a maximum number of turns for 1,000 or 1,600 ohms resistance, using a comparatively coarse wire. Now a higher resistance, such as 2,500 ohms, even 3,500 ohms which has been used in some cases, does not necessarily mean more turns. It usually means a finer wire of higher ohmic resistance which does not offer any more resistance to voice currents than the 1,600-ohm coils, while possessing the distinct disadvantage that it is easily burned out or mechanically damaged, owing to the very fine wire. The slight increase in pure ohmic resistance does not materially benefit the ringing to any extent. Ringers of 2,500 ohms resistance as a rule cost more than the 1,600-ohm ringers. This fact sometimes makes the inexperienced think they are better.

When purchasing ringers, it may be well to inquire as to the size of the wire and number of turns per spool. All things being equal, the best coils will be those having the greatest number of turns and the largest size wire. Different makes of ringers work well on the same line provided they are of the same resistance.

Some of the manufacturers wind by turns instead of resistance, so their "1,600-ohm" coils may measure 1,500, or 1,800 ohms. This is one reason why it is advisable to standardize on one make, because all the ringers of that make are uniform and the lines will balance up better than if several makes are used. It is advisable therefore to use the 1,600-ohm winding as it will be found entirely satisfactory. Any line that will not operate properly with 1,600-ohm ringers is either in bad condition or is overloaded.

The question of generator equipment is somewhat harder to decide. Commercial generators are furnished in 3-, 4-,

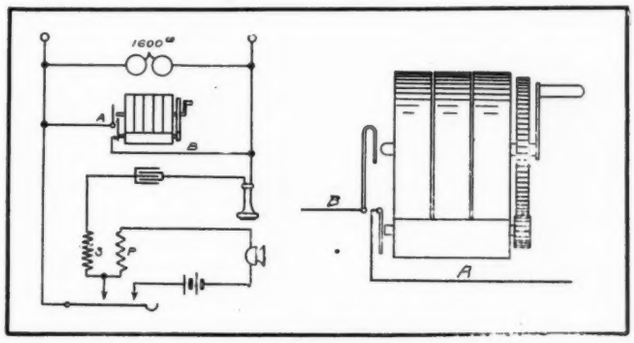


Fig. 2. Standard Magneto Telephone Circuit Using Condenser in Receiver Circuit.

and 5-bar sizes. Generators having more than 5 bars or magnets have been offered, but the magnets are usually of small size. Six or eight of them are no larger than the usual five bars of the large manufacturers.

A 3-bar, 1,600-ohm telephone will give very good service up to six or eight on a line which does not exceed ten miles in length. But if this line gets down into the mud, or a few vines grow over it, or it has one or two bad joints, the 3-bar generators will not furnish sufficient surplus current to take care of the added load, and the service becomes unsatisfactory. It is therefore much better to use a 4- or 5-bar instrument. The best satisfaction has been given by the 5-bar instrument, which on a whole may be taken as the standard for rural lines, particularly those having from 10 to 15 instruments on them.

This series of articles has not proceeded far enough to discuss the various types of equipment as to details. It is desired however to refer briefly to some of the latest apparatus which can now be purchased, as an understanding of it will enable better planning of the system.

The main object when building should be the giving of the best possible service with the minimum equipment. Never build two lines where one will do. Keep in mind the fact that good service must be given, but keep the line mileage down. If some scheme can be devised whereby the amount of traffic per line can be increased, then the amount of equipment can be materially reduced, and operating expenses and maintenance lessened.

In Fig. 2 is shown the circuit of an ordinary bridging telephone. There is a difference in the generator shunts of various makes. Some manufacturers advocate the use of a shunt whereby the armature winding is short circuited to protect it from damage by lightning. Others eliminate contacts in the shunt and simply disconnect one side of the generator from the line. Both methods have their advocates, and the advantages and disadvantages. It is sufficient to state here that instruments furnished by any

of the leading manufacturers will give entire satisfaction.

A standard modification of the circuit shown in Fig. 2, is the introduction of a condenser in the receiver circuit. This arrangement should be used in connection with rural line work. It adds greatly to the efficiency of the service,

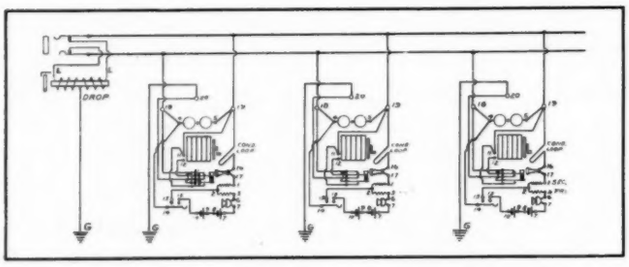


Fig. 3. Circuit for Calling Central Without Ringing Others.

as the condenser enables the telephones to be rung even if a number of receivers are off the hook.

Another modification is an extra contact in the generator shunt whereby the telephone does not ring its own bell when calling. It is true this lightens the load on the generator by 3 or 4 per cent. but it is doubtful if this arrangement is specially desirable in rural line work. It is undoubtedly better to let the party hear his own bell ring, as he then feels that the line is in working order. It also gives him a better feeling than if he turns the crank and does not hear anything "go."

The bridging telephone of course rings everybody on the line, all bells ringing whenever any one makes a call. Often the line is connected to a central office and when the subscribers call one another, the central office drop is thrown. The operator answers, only to find in the majority of cases that she is not wanted. To remedy this condition, the arrangement shown in Fig. 3, is now offered, and is recommended for all country lines which are connected to central offices.

By turning the generator crank in the usual mtnner, the subscribers call one another. By pushing the button while operating the generator the central office is called without ringing any of the instruments on the line. The central office equipment differs somewhat as furnished by the different manufacturers. The arrangement shown in Fig. 3 is, from experience, one to be preferred where the telephone line is subjected to the influence of other wires carrying heavy current.

The arrangement shown in Fig. 4 is also furnished and instruments as shown in this diagram, having 3-point push buttons, may be used with either central arrangement. The central office equipment is entirely satisfactory where the telephone lines are not subjected to influences from other wires. The telephone set arrangement with the 3-point push should not be used as the instrument must be connected to the line in a certain way and often the line is reversed somewhere and trouble results. Practically all the manufacturers furnish the 3-point push buttons, except where the pushes are to be used for equipping standard bridging sets already in service. As only new work is being considered this latter arrangement will not be discussed.

When using these arrangements, some special form of clearing-out signal may be used, at least several manufacturers advocate the use of some special clearing-out equipment. As a matter of fact, this is not strictly necessary in practice. The clearing-out can be accomplished by giving the generator crank a short turn without pushing the button, thereby throwing the clearing-out drop bridged across the cord circuit in the ordinary manner. This will of course ring all the bells on the line but then the conversation is over and if some one on the line "listens in," it makes no difference.

The reason why the drop will not fall when one subscriber signals another on the same line, is on account of the differential winding, one half of which opposes the other when current enters the winding from the lines *L,L*. When the button is pushed, the lines are shorted and current enters from *L.L* and flows to *G*, thus operating the drop.

In spite of the many advantages of systems of this character and the saving in initial building which they effect, they are seldom employed. Practically all the manufacturers have been furnishing this or some similar arrangement for the last three years. While it should be evident that an arrangement of this kind will greatly improve the service, but little prominence has been given it. Considerable actual building can be saved by the employment of these arrangements.

The central office equipment shown in Fig. 3 is not universally used, but a detailed description is given because there are some territories in which it is the only arrangement which can be used.

The drop winding is differential, each part consisting of 6,000 ohms, of No. 38 B&S gage, German silver wire, making the windings total 12,000 ohms. The wire size and resistance varies in the drops of different manufacturers. It is true this winding is non-inductive as a whole when across the metallic line but, in actual service, it has been found that owing to the iron core, the drop has sufficient impedance to not seriously affect the transmission. As the drop is cut out when one line is connected to another, long distance service is entirely satisfactory. The drop is across the line only when one subscriber is talking to another on the same line. As this is more or less a local conversation, the 4 or 5 per cent. loss due to the non-inductive drop is not noticeable.

In territories where there are long distance power transmission lines, or interurban trolley lines, this method of using a balanced drop winding so that the ground is equal on both sides of the lines, is the only one which can be employed. The method shown in Fig. 4 is noisy under such conditions.

Where some pay stations must be provided some distance out in the country, an extension bell may be bridged across the line at the central office and the special drop arranged as shown, employed. All the telephones on the line except the pay stations, may be the ordinary bridging telephones, the pay stations only having grounding buttons. This will enable calls to be made from the pay stations to the central office without ringing the telephones on the line. The telephones on the line do not throw the drop at the central office, their calls being given on the

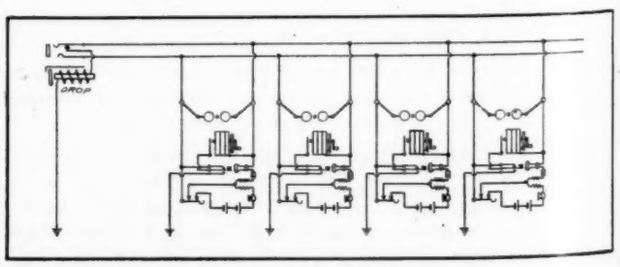


Fig. 4. Another Circuit for Secretly Calling Central.

extension bell. If the pay stations have generators permanently grounded, calls can be made to the central office only, and others on the same line can not be called.

It is obvious that when this arrangement is used, all the telephones on the line should be equipped with con-

densers, and especially the pay station telephones. Then in case of a reverting call, that is one from the pay station to a subscriber on the same line, the party at the pay station cannot tie up the line by keeping the receiver off the hook while waiting.

The problem of caring for the few pay stations sometimes necessary, is easily taken care of by this arrangement, and often it will save building several lines. It is a scheme that should be remembered when laying out a new plant.

In sections of territory where the parties on the rural lines demand central office service and will not pay a reasonable rate, such as $2 a month, this push button arrangement can frequently be effectively employed to secure a higher rate. Use the argument that telephones so equipped can ring central or ring each other and that $2 a month is in consideration of this special service. This argument often brings the necessary results. Do not describe the equipment, emphasize the difference in service as compared with the regular bridging arrangement.

Somehow the early push button telephones did not give good satisfaction on account of the flimsy construction of the button and the fact that only three contacts were used, necessitating connecting the telephones to the line in a certain manner. It is needless to discuss the question of poor buttons as practically every manufacturer is now turning out a high class button, which used with any standard make of instrument, will give satisfaction.

It is well to mention here that it is practically impossible to use this system in sections where lightning is very prevalent because the drop is directly connected to the ground. Extra good lightning protection must be used on lines having this equipment. Where the special arrangement shown in Fig. 3 is employed, the drop is particularly susceptible to burn-outs owing to its high resistance.

(To be continued.)

Pennsylvania Regulations Pertaining to State Roads

Regulations and Restrictions Promulgated by Edward M. Biglow, State Highway Commissioner, Affecting Erection of Wire Carrying Poles and Construction of Underground Conduits Along State Highways Drafted by Samuel D. Foster, Chief Engineer

Under and by virtue of the power and authority vested in the state highway commissioner (of Pennsylvania) by the provisions of the act of May 31, 1911, (P. L. 468,) the state highway commissioner orders and directs that the following conditions, restrictions and regulations shall govern the erection of all telegraph, telephone, electric light, heat and power poles and the laying of all electric conduits upon or in any of the state highways or any portion thereof:

1. All poles shall be placed on the outside of the ditch or gutter line, and in all cases a clear space of not less than 3 ft. must be preserved between the nearest face of the pole and the edge of the road, this distance to be measured from the edge of the macadam, brick, concrete or bituminous paving, in the case of an improved highway, or from the edge of the traveled road in the case of an unimproved road surface. On the road of the latter class the edge of the traveled road will be designated by the highway commissioner.

2. Trenches for conduits shall be dug so that the nearest edge of the trench is at least 18 in. outside of the edge of macadam, brick, concrete, or bituminous pavement, or, in case the highway is not improved, the trench for the conduit shall be placed so that its nearest edge is at least 10 ft. from the general centre line of the traveled road, the centre line to be determined by the highway commissioner.

3. The material excavated from holes and trenches during construction shall in no case be placed on that portion of the road used or needed by the traveling public; nor, when the road surface has been improved, shall any portion of the excavation be placed on the macadam, concrete, bituminous or brick paving.

4. Excavated material shall be so placed, and all operations so conducted, that there may be no interference with the flow of water in any gutter, drain, pipe, culvert, ditch or waterway, and such gutter, drain, pipe, culvert, ditch or waterway which in the judgment of the state highway commission has been injured or obstructed by any operations of a telephone company, shall be promptly repaired by such company.

5. Red lights shall be displayed from sunset to sunrise at any and all points on the work where there may be danger to the traveling public, either on account of operations, materials or machinery; and proper barricades shall be maintained between the road and open trenches or holes sioner, are necessary for the proper protection of the pubwhere such, in the judgment of the state highway commislic. In case dynamite or other explosive is used on the work all necessary precautions which, in the judgment of the state highway commissioner may be necessary, shall be observed by the company, in order to prevent damage to life or property.

6. In case it is necessary to cross any road with a conduit, not more than one-half of the width of such road shall be opened or obstructed at any one time. In case a conduit parallels a road, the trench for such conduit shall not be opened up over a distance of more than 1,000 ft. at any one time.

7. All excess material from excavation, together with all other materials not used in construction, shall be completely removed from the right of way of the road, and the road itself, its gutters, ditches, drains, and slopes left in as good condition as before the commencement of operations.

8. Any machinery employed on the work shall be operated and all work conducted so as not to obstruct or endanger travel.

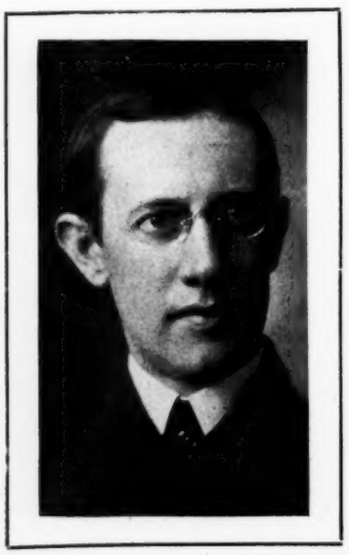
9. When it becomes necessary to open a trench through an improved cross-road, all precautions shall be taken which, in the judgment of the state highway commissioner, may be necessary in the matter of refilling the trench so as to prevent future settlement therein; and due care shall be exercised in the work of relaying the improved paving over the trench so as to give a surface of the same character and quality and on the same grade line as on that originally existing. To accomplish this end, the back filling in the trench shall be thoroughly tamped in layers not over 12 in. in thickness up to a point about 18 in. below the surface of the road. At this elevation, trenches shall be widened 1 ft. on either side and the excavation replaced with a slab of concrete mixed in the proportion of 1 part cement to 2½ parts of sand and 5 parts of broken stone or gravel. This slab of concrete shall be not less than 6 in. thick and upon

(Continued on page 574.)

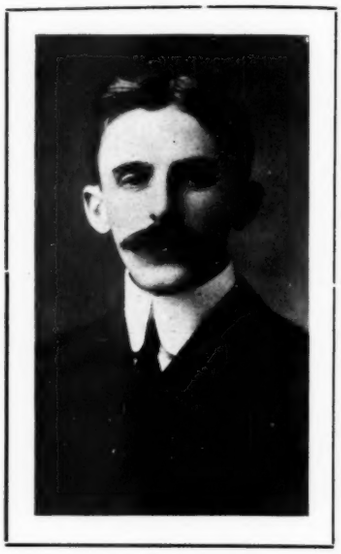
A Quartet of Men Prominent in the Telephone Field

R. MAX EATON, director of the Niagara County Home Telephone Co., and president of the Niagara Searchlight Co., Niagara Falls, N. Y., has been actively in the telephone business all his business life up to April, 1912, when he resigned as president and general manager of the Niagara County Home company to assume the management of the Niagara Searchlight Co. He was elected president of the latter concern in October, 1911. Mr. Eaton was born in Meaford, Ontario, February 7, 1871, coming to the states when twelve years of age. He received a common and a high school education, completed by a special course at the Massachusetts Institute of Technology, at Boston. In 1899 he went with the New England Telephone Co., at Boston. Moving to Philadelphia the same year, he went with the Philadelphia Bell, where he remained until 1902. From 1902 to 1904 he was assistant general manager of the Keystone Telephone Co. there, in 1904 assuming the presidency and management of the Niagara County Home company. He served as secretary of the New York Independent association from 1905 to 1910.

FREDERICK CLAUDE MANNING, vice-president, secretary and sales manager of the Sumter Telephone Mfg. Co., Sumter, S. C., was born in Emmitsburg, Md., September 9, 1870. He was educated at Mt. St. Mary's College, at Emmitsburg. He is a member of the Knights of Columbus and the B. P. O. E. Mr. Manning first became interested in the telephone business during the spring of 1904, while identified with a machinery and electric supply company, at Knoxville, Tenn. Visiting Sumter, he met C. T. Mason, then manufacturing telephones on a small scale. Finding this apparatus more satisfactory than other makes, he became interested in organizing, equipping and building Independent exchanges throughout the Carolinas and Virginia in 1895 to 1897. He was later instrumental in organizing the Telephone Manufacturing Co., at Sumter, and later still the Sumter Telephone Manufacturing Co., in 1899. The company has prospered since its organization and now enjoys a large patronage extending through the United States, Mexico, Cuba and many foreign countries. Its principal business, however, lies in the southern states.



RAY H. MANSON, secretary and chief engineer of the Dean Electric Co., Elyria, Ohio, was born in Bath, Maine, August 25, 1877. He graduated from the University of Maine with the degree of electrical engineer. He is an associate member of the Institute of Electrical Engineers and a member of the Society of Automobile Engineers. He is a Phi Kappa Sigma. After his graduation Mr. Manson taught at the University of Maine, acting as assistant to the professor of electrical engineering. In 1899 he associated himself with the Western Electric Co., serving in various capacities, including experimental laboratory assistant. From 1900 to 1904 he was with the Kellogg Switchboard & Supply Co., in the laboratory and advertising departments and as sales engineer. In 1904 he became sales engineer for the Dean Electric Co. Later he was made sales manager and then chief engineer and secretary of the company, in which capacities he has since served. Mr. Manson has been actively associated with a number of important developments in the telephone field. He has specialized in original laboratory research and has perfected many devices now in wide use.



WILLIAM CARROTHERS DILLON, of Corsicana, Texas, is general manager of the Corsicana Telephone Co., the Talbert Telephone Co., the Kerens Telephone Co. and the Vest Telephone Co. Mr. Dillon was born in Girard, Kans., July 24, 1878, and was educated in the grade and high schools of that city. In 1896 he became night man and collector for the Girard Telephone Co., with which he remained four years. Since then his career, briefly summed up, has been as follows: Superintendent of construction for the Peoples Home Telephone Co., Birmingham, Ala., four years; superintendent of Memphis Telephone Co., Memphis, Tenn.; traveling switchboard and cable man for the Central Home Telephone Co., Louisville, Ky.; special agent Cincinnati & Suburban Bell Telephone Co.; state division superintendent for Pioneer Telephone Co., Oklahoma; special work traffic department Kansas City Home Telephone Co., Kansas City, Mo. Mr. Dillon is now, aside from managing the first named companies, consulting engineer for nine other Independent telephone companies in the Corsicana district. The four companies of which he is the head operate 10 exchanges.

Department of Railway Telephony

The Fifth of a Series of Articles on Telephone Train Dispatching Takes Up the Question of Installation of Equipment at the Dispatcher's Station—The Use of Portable Telephones by Railroads

Installation of the Dispatcher's Station.

By John A. Kick.

The safe and proper handling of trains is of grave concern. The dispatcher is required to plan and execute quickly with the factor of human error ever present, and every safeguard against a failure should be thrown around him in his work. Therefore, I believe a dispatcher's office should be separated from all other offices. No one should be allowed to enter except those who have company business with the dispatchers which can not wait or be handled through the chief dispatcher.

Other business carried on in a dispatcher's office results in more or less confusion to the dispatchers. This is especially so where a number of telegraph instruments on message wires keep up a constant din. Added to this may be more or less conversation on subjects not of interest to the dispatcher but bound to attract his attention.

Location of Dispatcher's Signaling Equipment.

It appears to be generally agreed that a dispatcher's office should be separated from the general telegraph office, and this being so, the question arises as to where the selective signaling equipment should be located. Some contend that the location should be in the telegraph office under the care of the wire chief; others that the dispatcher's signaling equipment should be in the dispatcher's office and so placed that tests can be made with the apparatus all under observation. The latter plan appears to be the more satisfactory and where properly carried out, excellent results are obtained.

As a general proposition I believe it is the best policy to have the lines strung and ready for service; then the dispatcher's station completely wired ready for test to the way stations as they are completed in order. Thus the installing gang can make the final adjustment on the return trip and the job is done.

The following described method of locating and mounting equipment is one which has been used quite extensively and found to be quite satisfactory. It is of course understood that conditions are sometimes met which prohibit following the details of any standard assembly of the apparatus but it will be found that cases are few where the method herein outlined will not generally meet the requirements.

A standard of protection should be adopted; a circuit for proper and positive operation; an order of installation of the units of equipment; a fixed standard of location of the units; a standard of efficiency for grounds for protectors; an alignment of mounting centers, connecting wire, capacities and methods.

It is preferable to mount the signaling equipment near the dispatcher so that the wire chief can have the dispatcher operate the signal key while the wire chief makes the relay adjustments. The proper adjustment of the signal transmitting relays is very important and will be given special mention later.

The coils, condensers, relays, switches and fuse blocks should be mounted in a cabinet or on a mounting panel. Where the equipment for two or more circuits is mounted on one panel, the mounting should be so arranged as to indicate, by position, the equipment belonging to each circuit.

It is taken for granted that the line switches, arresters and fuses, will be mounted with the arresters, fuses and general switchboard equipment, the dispatcher's office being treated as a "Drop Side" on the regular test board. The mounting panel in the dispatcher's office should be equipped with the signal apparatus with the adjustable relays mounted on a line with the eye of an average sized person, the non-adjustable condensers and coils above with the battery, switches and fuse blocks below.

This arrangement includes a switch in the main signaling battery to allow the battery to be opened while making any renewals of equipment, also fuses for protection in case the line becomes short circuited and draws an excessive current. When a wire chief is always at hand, it is advisable to fuse the main signaling battery in the test room instead, in order that the wire chief must be called in case of fuses blowing. This is done as it has been the experience that fuses will be repeatedly renewed by those not familiar with line troubles and testing methods, while a wire chief will test the line first, perhaps saving equipment which might otherwise be damaged.

Equipment so mounted can be wired in forms to be laced, shellaced and strapped to the face of the mounting panel, making a very presentable outfit. A containing cabinet for each complete signal outfit is a preventative against accumulation of dust and in some locations is strongly advised.

The wires leading from the signaling panel to the dispatcher's table should be protected by circular loom where it is necessary to go under the floors and by trunking along walls below the chair board.

A master selector is placed with its center on the center line of the dispatcher's working position, as it is operated by either hand. The position as respects the distance from the working edge of the table is gauged by the width of the train sheets, available space, etc. Transmitter and switching keys should be placed to the left of and in a line with the face of the master selector, as these keys are worked with the left hand while using the pen in the right.

The jacks for the dispatcher's talking set should be in the apron of the table about 18 inches to the left of the center line of the position, or at least far enough to prevent the operator's clothing from rubbing and wearing the cord where it enters the plug. It is advisable to wire in a duplicate set of jacks in each position to allow the chief to cut in on the circuit with the dispatcher whenever necessary.

The Battery Installation.

The dispatcher's main and local battery is best located by placing in a battery cabinet in the dispatcher's office, thus providing short runs of wire between the battery and equipment and giving means of quick action in case of battery troubles.

Some installations have been made placing the main and local battery in the attic or basement. Both places are either locked or inaccessible during the night or so difficult to inspect that the night force is unable to clear troubles, causing the system to remain out of service until morning.

Simplex coils and other equipment not in the dispatcher's

signaling or telephone talking sets can be located in the telegraph office. Where a test panel is not used, the simplex coil should be placed on the circuit by using a switch which allows its removal for test.

As a general proposition telegraph and telephone operating tables should be wired to solder terminals, the wiring neatly formed and strapped up to keep the wires out of the way as well as to protect them. This method supplies an easy means of test by using a receiver across the terminals as well as serving to provide a safer way for renewals or additions.

The Use of Portable Telephones in Railroad Times.*

By J. F. Caskey.

I feel that it is safe to say that to the discussions in this association and the interchange of views of the members, is due primarily the inauguration of telephone train dispatching circuits, telephone message circuits, together with all corollary benefits and possibilities resulting therefrom. The discussions, suggestions, hopes and fears have been thrown into the caldron of experiment and trial and out of it has come a revolution of vast importance to the railroads and public at large. Hence, the prediction is freely made that in the course of some years, as far as the railroads are concerned, the old Morse telegraph, which we all love, and from which we will part with many a heartache, will be relegated to the scrap heap of discarded appliances and methods, in the same manner as the steam locomotive has superseded the canal boat and as the electrical locomotive will eventually supersede the steam locomotive.

This revolution will be gradual, fast in some localities, slower in others, but come it will, as it is the logical solution of many questions. It requires but a very short memory to cover the change from telegraph to telephone in railroad train dispatching, and as yet we have only made a beginning.

Important changes in appliances and methods bring with them results not only immediate, but corollary in their effects. Improvements beget improvements and one good thing brings another to light.

Upon the successful inauguration of telephone train despatching, carrying with it many advantages, which have been frequently mentioned and with which railroad managers are becoming daily more familiar, the installation of portable telephones on passenger, freight, work and tool trains was a perfectly logical result. The beneficial results of such an installation is patent to any one when the time wasted by heavy traffic and crews of stalled trains and the very often more important delays to other traffic awaiting arrival of stalled trains of which no word has or can be received, is realized.

Mr. Camp, of the Canadian Pacific Railway, reports all trains and 1,000 portables in service with gratifying results. The Lehigh Valley Railroad is now completing an installation of 600, commenced during the past summer, and already the results have been highly satisfactory in every respect.

On the Canadian Pacific Railway, the portable telephones are hung on hooks in baggage cars and cabooses and a flexible wire, 150 feet in length, is used with a Richardson pole to reach the wires. Each train is to be equipped with about 750 feet of flexible wire to be used in bridging around breaks in the line should an accident take the line down and prevent a connection to dispatcher.

The Lehigh Valley installation consists of a portable telephone in wood case 14 in. x 15 in. x 15½ in., equipped with a hand telephone, two cells dry battery, bell for incoming calls, and a 5-bar generator, with an 18-foot sectional line pole and 100 feet of flexible wire. Wood boxes fastened to sides of baggage cars and cabooses under switch lock are installed to prevent the apparatus being damaged or stolen. Each telephone set is furnished with a complete set of instructions and blueprints showing all telephone wires on the poles. All telephones and line poles are stamped with the name of the railroad company and numbered consecutively, a telephone and line pole of same numbers being installed in cars of which the numbers are kept on record, so that inspectors know at all times just where to look for any particular telephone or pole.

The apparatus remains in the car assigned continuously except when going off the line of road on a special trip, when it is removed at the junction point and the superintendent notified. At certain points a stock of telephones and poles is kept for emergency use, and for sections of through passenger trains, so that all trains of every kind passing over the road will have the telephone protection in case of accident.

Bridge and rail laying gangs, as well as section supervisors, are furnished with complete equipment, enabling them to work on closer margins of time with satisfactory results as to efficiency and economy.

Use by Rail Laying Gangs.

The following is an instance showing the benefit of having rail gangs equipped. The rail laying gang on an eastbound track was about to suspend work on account of the schedule time of an eastbound passenger train. By use of the portable telephone word was obtained that time had been allowed on this particular train of fifty minutes, enabling the gang to proceed with the work accordingly. Under ordinary circumstances they would have been obliged to stop and wait until the delayed train had passed by, as they were not within close range of a telegraph office.

The following verbal report has been made:

"During the past year the rail laying gangs in a certain territory, equipped with portable telephones, have laid more rails in the same time and with less detention to trains and men, than ever in their history, due to the close margins in which they are able to work by having the telephones."

Tool trains immediately connect with the dispatcher upon arriving at the scene of trouble and maintain a connection until their work is done. Each dispatcher is able to ring up a portable, connected to the line, by use of an interrupter.

It is of course difficult to arrive at any definite figures as to the savings affected, but unquestionably they are important.

Inspection of apparatus which was carried daily over the road for a period of six months or more, reveals the batteries still in good shape and practically no damage except a few loosened screws, due probably to rubber bushings and wood encasements drying out. Up to the present time no trouble has been experienced by theft or tampering with the apparatus. In fact, the train men appreciate the value of the installation and use it freely when they can help cut and save time.

One trainman reports saving himself a walk of four miles in zero weather during the past winter by using his portable. He considers the telephone a life preserver.

Accidents have been avoided in two cases as follows:

Employes equipped with portable telephones noticed a freight train moving eastward with a brake beam hanging down. The dispatcher was immediately notified and train was flagged at the next station and attention given to the damaged car.

A broken rail on the main eastbound track was noticed by a train crew and the dispatcher immediately notified. He

*Abstract of a paper presented at the annual convention of the Association of Railway Telegraph Superintendents.

directed the train crew where to find the section forces and inside of ten minutes of the time the rail was noticed, the section forces were on their way to make repairs.

The 600 telephones when the installation is completed, will be divided as follows:

150 to passenger trains, 375 to coal and freight trains, 40 to work trains, tool trains, etc. 35 in miscellaneous use.

The cost per car to install under present method is as follows:

Portable telephone stencilled and numbered	$22.70
Line pole stencilled and numbered	5.60
Boxes and locks for same with brackets, etc	3.50
Labor	2.00
Total	$33.80

It is to be expected that many of these sets will be rarely used, especially on passenger trains; however, they are like fire fighting apparatus, placed for emergency and if properly cared for, regularly inspected, and used with ordinary common sense, will prove of great value to the railroad company and the traveling public.

In case of an accident requiring aid of physicians, they should be the means of saving life and obtaining help when badly needed. They will serve the public in a manner similar to the C. Q. D. or S. O. S. of the wireless operator aboard ship.

In view of the many benefits to be derived the cost does not appear excessive. An accident prevented, a life saved by promptly obtaining a physician, a few delays to heavy traffic avoided and the entire cost will be met.

The Chicago & Northwestern's Telephone Lines.

The annual report of the Chicago & Northwestern Railway which has just been issued states that a telephone line for use in dispatching trains has been completed from Boone to Council Bluffs, Iowa, a distance of 148 miles, and a telephone line for like use is being installed between Chicago and Clinton, Iowa, a distance of 138 miles. This will provide a continuous telephone line from Chicago to Council Bluffs. Upon completion of this line the company will have in operation 1,918 miles of telephone lines for use in dispatching trains.

L. & N. to Install Complete Telephone System.

According to newspaper reports, the Louisville & Nashville Railroad Co., is planning to spend approximately $1,500,000 in the extension of its telephone system to an aggregate of 30,000 miles of wire. So far there have been strung about 5,000 miles of telephone wire, and the work of perfecting the system to embrace every operator in the employ of the company will be begun immediately.

Automatic Company to Build Des Moines.

Articles of incorporation have been filed with the secretary of state by the Automatic Telephone Co., which proposes to install a telephone system in Des Moines, Iowa, providing a suitable franchise can be secured. The authorized capital stock of the company is $1,000,000. There are to be 100,000 shares, 20,000 common and 80,000 preferred.

The incorporators are: Ernest L. McClean and E. M. Hussey, of Augusta, Me., and E. M. Leavitt, of Winthrop, Me. The interests back of the company are those which are interested in establishing automatic systems in Davenport, Rock Island and Moline.

An automatic system recently was proposed by Henry Riegelman, of Des Moines, and he started an active campaign in its behalf. Lack of financial support, however, caused its postponement for the time being.

The new concern has been given a strong endorsement by the Commercial Club directory board, which passed a resolution recommending that the new concern be given a non-transferable franchise with the proviso that no rates be charged until a certain minimum number of telephones had been installed. The resolution has been presented to Mayor James R. Hanna. It is expected he will call for a vote on the proposition to be made at the general election November 5. The promoters propose to make no charge for service until 10,000 stations are installed.

The Automatic Telephone Co. will furnish service at $1 per month for four-party residence; $1.50 for two-party; and $2 for private line. Business telephones will be $2 per month for four-party; $3 for two-party; and $4.50 for private lines. The charge for trunk lines will be in proportion to the number of stations.

The new company wishes to substitute low rates for a franchise tax or a tax on posts or wires.

According to the proposed agreement the new company will agree never to sell, or permit the majority of its stock to come into the hands of any competitor or anyone who owns the majority of stock in any competing line. In this event, the entire property of the company would become the property of the city of Des Moines.

The Automatic Telephone Co. will agree, the promoters say, to invest $2,000,000 capital in Des Moines.

Bell Refuses to Ask Franchise in Des Moines.

Claiming to operate in Des Moines, Iowa, under the state law permitting telephone companies to use the highways, the Iowa Telephone Co., through H. G. Conger, its commercial manager, has officially notified Mayor James R. Hanna that the company would refuse to seek a franchise from the city.

Authority for the statement of the attitude of the company came from N. T. Guernsey, who has recently been elected general counsel for the Bell interests.

With the attitude of the company shown, Mayor Hanna declares it will be the policy of the city to proceed with the proposed ordinances to place an annual rental tax of $1 on poles and $1 per mile on undergrond wires; also to regulate rates and demand one free telephone for every 1,000 inhabitants of the city.

"We will not try to oust the company, but we will go ahead with the ordinances and other measures we may deem proper," said the mayor."

The city will take no action to oust the telephone company from the use of the streets, but will seek through ordinances to secure the privileges which a franchise would bring.

There is, however, in the district court at the present time an action brought by a private citizen, acting for the state, to oust the telephone company.

The supreme court has recently and for the second time rendered an opinion which, it is stated, nullifies the claim of the telephone company to have a franchise under the state law. In this opinion it was stated that the highways of the state may be used by the companies but that this privilege does not extend to the cities.

United States Independent Claims Settled.

It is authoritatively stated by the Rochester, N. Y. papers that a compromise has been reached in the cases of the security holders of the United States Independent Telephone Co., who have been bringing actions against the promoters of the defunct company to secure a refund of the money paid for its securities at the time of its promotion. The settlement is said to have been made on a basis of approximately 58 per cent. of the total claims, which aggregate some $2,600,000.

The U. S. I. company was organized to cover a large part of New York state, including New York City.

Arkansas Company Rushing Construction.

Work on the Independent telephone system in Clarksville, Ark., is progressing rapidly. The system will be first class in every respect, and bids fair to become a permanent and popular institution.

Queries on Theory and Practice

Correct Reading of a Voltmeter.

"We wish to obtain information in regard to a 0-6, 0-60 Pignolet voltmeter.

In testing for grounds, we found that with the ground on one side, we invariably had a higher reading than on the other. Further investigation showed that without the use of the ground key and with one test cord on one side of line and the other to ground, we would secure a reading of say 10 points with a 50-point battery. By reversing the test cords, we would then secure about a 10-point throw, which would at once drop to about 2 or 3 points. To be sure that this occurrence was not due to foreign voltage, we tested without battery but obtained no results.

Then, to make sure there was no defect in the wiring, we connected batteries at the bench and removed the voltmeter from its former mounting. Then we found that with the negative to ground and positive to line, we always secured a 6 to 8-point lower reading than when the positive was connected to ground and the negative to line. After a high reading upon reversing the connection, we would get a throw to about the same place, which in about two seconds would drop back about 8 points.

This test was made on several lines with the same result, except that if made in wet weather, the reading would go to 25 points or more. The way the battery was connected would make little or no difference. The 0-60 volt scale with a 50-volt battery was used.

Can you inform us if this always occur, why it does so, and which would be the correct reading? These tests were made on magneto farm and toll lines with no condensers in the circuit."

The action which is described has been noted by telephone men and tested out so that the location and nature

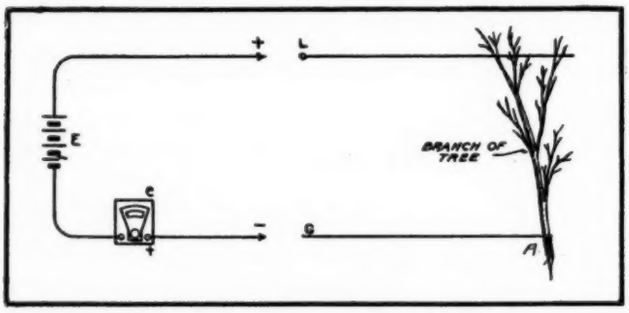


Diagram Illustrating Counter Voltage of Tree Leak.

of the cause are fairly well known. It is caused by an electrolytic action somewhere in the leakage path from line to ground. The writer once took the branch of a tree into the office and wired it up as shown in the sketch. At the stem of the branch, *A*, a tinned copper wire was wrapped tightly around the freshly scraped bark for a considerable distance. A galvanized iron line wire was laid across the leaves and held down by a board. Testing battery and a voltmeter were connected in the simple circuit shown.

When the plus wire was connected to *G* and the negative to *L*, a steady deflection occurred. Upon reversing, so that the plus was connected to line, a slightly lower reading was obtained, which fell to about half the original.

The passage of the testing current from the line wire to the foliage meets with some opposition. A chemical change takes place which offers a voltage in opposition to the flow of the current. This necessarily cuts down the current and so reduces the reading of the voltmeter, as you noticed. This chemical action does not take place when the current flows from the foliage to the line wire. It was found that the chemical action was more pronounced with old galvanized iron wire which had turned dark than with new wire on which the zinc was bright. It was also more noticeable with soft, sappy plants than hard, dry ones, like an elm tree.

Your test for foreign voltage failed to give results because the counter voltage due to the battery-like action of the tree or other leaks disappears when given a chance to furnish current through the voltmeter. Its battery power vanishes, by polarizing.

The correct reading to be used in calculating the leakage resistance is the steady value.

Connections for Charging From Three-Wire Circuit.

"Can you tell me why the fuse on my neutral wire blew out when I tried to charge the storage battery? We have

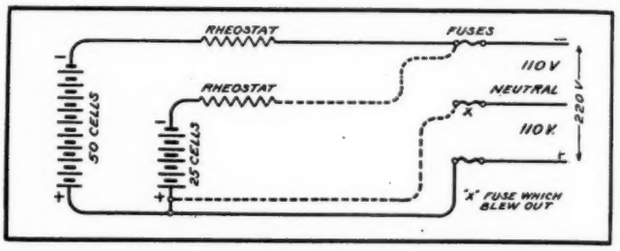


Fig. 1. Incorrect Connections for Charging.

50 cells in one battery and 25 cells in another. The positive ends of both batteries are tied together for some temporary work and the 50 cells are charged from a 220 volt, Edison three-wire circuit. When I started to charge the 25 cells from one of the 110 volt sides of the three-wire source, the fuse in the neutral blew out in a hurry. I had to cut the two batteries apart at their positive ends to keep the fuse in. We use a rheostat in series with the battery to regulate the current and have a separate rheostat for each battery."

From your description Fig. 1 has been sketched, showing how the fuse was blown. Both batteries are tied together at their positive ends. For charging purposes, the 50 cells are connected through a rheostat to the positive and negative terminals of the Edison system, so as to get 220 volts. The dotted lines show how, apparently, you tried to charge the 25-cell battery. The polarity would show up all right, but when the switch is closed to charge, the lower 110-volt circuit will be short circuited and blow one or both fuses. The chances are that the neutral fuse was a little lighter than the other and so blew out first.

The correct way to charge both batteries at the same time without disturbing the relation of the batteries to each other is shown in Fig. 2. Simply switch the negative charg-

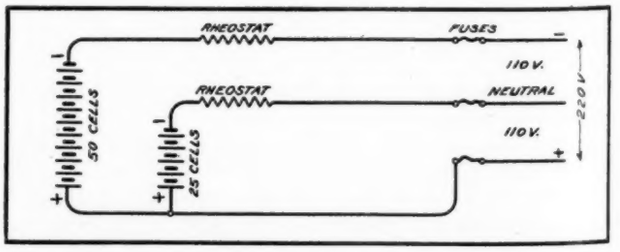


Fig. 2. Correct Connections for Charging.

ing wire of the 25-cell battery from the negative terminal of the Edison source to the neutral and let the wire common to both batteries be the connection for the positive terminal of the battery. This will allow you to give each battery as much current as you choose and one set will not interfere with the other in any way.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Ironton Home to Buy Bell Local Plant.

The Ohio Public Service Commission has granted formal permission to the Home Telephone Co., of Ironton, Ohio, to purchase the local property of the Central Union Telephone Co. and to merge the two plants. Authority was also granted the Home company to issue $56,275 of additional common stock and $85,000 first mortgage, 6 per cent. bonds for the purpose of consumating the sale.

The commission prescribed the following disposition of the proceeds from the sale of the new securities: For the purchase of the Bell property, $63,725; for the unifying of the two plants, approximately $25,000; for the payment of bills payable, $19,550; and for the construction of improvements and extensions, approximately $33,000.

The commission states that the stocks and bonds must be sold "at the best price obtainable, and at not less than the par value thereof." Reports must be made to the commission every three months showing the prices received for the securities and the exact disposition of the proceeds.

The order provides that the Home company shall file with the commission a schedule of the rates which it proposes to charge under the new arrangement, and that these rates shall be "reasonable." The order does not take effect until this has been done and the schedule approved by the commission.

The commission has granted permission for the Vickery Telephone Co. and the Fremont Home Telephone Co. to connect their respective systems. The charges for service under the new arrangement are to be filed with the commission before the deal is finally approved.

The Pomeroy & Middleport Telephone Co. has been granted authority to issue $11,575 of stock, to be sold "for the best price obtainable, and at not less than 80 per cent. of the par value thereof." This right to sell below par is not a usual concession by the Ohio commission.

The Bremen Telephone Co. has been given the right to purchase the local property of the Central Union Bell in Bremen. The sum involved is $150. The order contemplates "adequate service for a just and reasonable charge," a schedule of rates to be filed before the merger is finally approved.

The Millersburg, Wooster & Orrville Telephone Co. has been given permission to issue $2,200 additional capital stock, for the purpose of making extensions and improvements to its system.

A certificate of "public necessity and convenience" has been granted the Kingsville Telephone Co., giving that corporation the right to operate in Kingsville. This order was issued coincident with another giving the Kingsville company permission to purchase certain telephone lines and equipment in Kingsville now owned by the Ashtabula Telephone Co. The sum of $5,000 is to be expended for the property and for extensions and improvements.

Confusion in Conditions at Baltimore.

Asserting that his company is anxious to comply with all of the Public Service Commission's orders, that it would like to have more information before agreeing to the order which it recently passed extending the flat-rate telephone service until April 1, 1913, President F. H. Bethell, of the Chesapeake & Potomac Telephone Co., has sent a letter to the Maryland Public Service Commission in which he asks a number of pointed questions.

He refers to the order passed by the commission on January 2, in which it abolished the flat-rate service after October 1 and fixed a new schedule of rates for measured service to be in effect for three years from May 1. He then says that in its efforts to comply with the terms of that order his company has expended since the order was passed approximately $300,000 and appropriated approximately $300,000 more for investment in Baltimore.

Mr. Bethell asks whether flat-rate subscribers who have signed contracts for other grades of service, under which contracts additional equipment has been installed, are to be charged for the new service at the old flat rate, or whether they are, if the old rate is charged, to be restricted to the old facilities, or whether, again, they are to pay for the service which they have contracted at the established rate for such service?

Mr. Bethell claims that approximately 99 per cent. of all the telephones in the city are under contracts at the standard rates and that, after the order of January 2, the company went about securing subscribers at the new rates which were to become effective, and did become effective, on May 1.

At the time the order was passed, Mr. Bethell says, there were 968 flat-rate telephones in use in the city. Since that time 379 of the flat-rate subscribers have made contracts for the measured service. He declares some have had private exchanges installed, some have had extensions made and some have had auxiliary lines put in. These improvements, Mr. Bethell thinks, should be paid for in accordance with the established schedule.

The subscribers, however, contend that they entered into contracts for measured service under the impression that the flat-rate service would be discontinued after October 1. Now they say that under the last order they are entitled to the old service until April 1 of next year.

Denver Asks Competition Over Mayor's Veto.

The supervisors of Denver, Colo., have passed over the mayor's veto a resolution inviting proposals for another telephone company in Denver. The aldermen had passed the resolution despite the mayor's refusal to sign it. The supervisors did the same, as the result of a conference.

Nebraska Commission Demands Physical Value.

The Nebraska Railroad Commission has refused to authorize the Cuming County Telephone Co. to issue $21,000 of stock, for the purpose of accomplishing a merger with the Bell company, until a physical examination of the property has demonstrated its value.

Bell Fails to Secure Injunction in Memphis.

Judge McCall in the federal court at Memphis, Tenn., has denied the application of the Cumberland Telephone & Telegraph Co. for an interlocutory injunction restraining the city of Memphis from putting into effect the ordinance reducing telephone rates.

Opinions differ as to the present status of the case. Counsel for the telephone company is of the opinion that the temporary restraining order granted by Judge McCall remains in force pending the time in which the company

may appeal. The time is 30 days, and the indications are that within that time the company will take the case to the circuit court of appeals at Cincinnati.

C. M. Bryan, city attorney, however, is of the opinion that the effect of Judge McCall's ruling is to put the city ordinance into effect at once and leave it in effect unless the court of appeals shall by writ of certiorari and supersedeas again suspend it.

"The city now has the right," he says, "to make an arrest every time the company violates the ordinance, and I am inclined to the opinion that the city will pursue that policy, beginning at once."

Contests Michigan Commission Ruling.

The Michigan Railroad Commission has been served with notice that J. B. Hendree, an attorney, representing the stockholders of the Vermontville Telephone Co., had started suit in the Eaton county circuit court asking for an order compelling the commission to show cause why it should not allow the Vermontville Telephone Co. to incorporate and construct a new line.

The suit grows out of a recent decision of the commission that public convenience did not require a new telephone system at Vermontville.

Merger Accomplished at Pasadena.

The merger of the Home Telephone Co., of Pasadena, Cal., and the Pacific Telephone & Telegraph Co. has now been formally consummated. This was done under the order of the California Railroad Commission. By this deal the Home company takes over the property of the Bell in Pasadena, and the Pacific company acquires the Home stock.

W. M. Eason is retained as president and McD. Snowball as secretary. The board of directors includes the foregoing: H. M. Robinson, vice-president; H. F. Anderson, Robert Pitcairn, Jr., John G. Mott and W. H. Vedder.

Public or Private Ownership of Public Utilities

An Argument Against Municipal Ownership by the President of the Southern California Edison Company, Los Angeles, Cal., Who Also Indorses State-Wide Control of Privately Owned Ulilities—From Journal of Electricity, Power and Gas

By John B. Miller

There are only two kinds of public utility ownership, private ownership and public, or as it is more commonly called, municipal ownership. The public is entitled to expect the same treatment from either kind of ownership; that is, good service at the most reasonable rates with a liberal policy as to extensions. These three things depend upon:

1. An efficient, alert, and as near as may be, unchanging management and force of employes;
2. The command of sufficient money at a not undue cost to promptly make needed extensions.

One advantage which municipal ownership possesses over private ownership is that municipal bonds can usually be sold on a slightly lower interest basis than privately owned public utility bonds. Another advantage which it may be said to possess is that, as a rule, municipally owned plants are not operated for profit, which should enable them to make a somewhat lower rate than privately owned plants can do.

There are, however, two sides to this question. By many it is maintained that this is not really an advantage, as money must be had for extensions and this money must be obtained by the sale of municipal bonds, so that the consumer and taxpayer make up the difference in the low rate by increased taxes.

This difference in the cost of money reflected in the average consumer's bill is not over a few cents a month and the advantage of it is more than compensated by the likelihood, under municipal ownership, of the presence of certain evils extremely inimical to good service, economical management and prompt satisfaction of public demands for service and extensions.

For instance, in order to bring the people what they are entitled to receive in the way of good service, etc., the management and the force of employes must be quite efficient and as long in tenure of service as possible. This is almost impossible to obtain under municipal ownership, because instead of alert, efficient business men being obtained for management, whose only idea is that of efficiency and devotion to duty, the manager and employes are more apt to be selected, either because of political influence or ability to manipulate the plant and its system in such a way as to make political capital for the mayor, common council, or other political backers behind them.

Again, it is most difficult for municipally owned plants to obtain help, or management of the highest order, because men of ability and experience much prefer employment with privately owned corporations, where their tenure depends solely upon their ability and loyalty, and in no respect upon their ability to do politics or influence votes.

Under municipal ownership as a rule plants are operated for profit, or even if so, can be expected to earn but a moiety of the amount necessary to meet the demand for extensions, and there is great likelihood of stagnation. If the city or territory served by the municipally owned plant, grows after its first installation to a point where there is additional territory and consumers clamoring for extensions, these cannot be made except by the sale of bonds.

Municipal ownership bonds must be voted by the people. The majority of the people concerned are already served, and to vote more bonds to run extensions to sparsely settled territory would mean for those who already enjoyed service only an additional tax. Consequently it has been the experience that under municipal ownership extensions are not made with nearly the liberality or promptness that exist under private ownership.

It has long been the opinion of the best thought on public utility matters that the people are best served by having the municipality own and control all utilities having to do with health and sanitation such as water, sewers, policing of streets, etc., but all other utilities calling for a more or less high degree of technical ability and the employment of a great many men, such as transportation, telephone, telegraph, electric light, gas, etc., carrying the chance of hazard not only financially, but as to life and property, can best serve the people when privately owned and publicly regulated.

These companies should be properly regulated by a

state board consisting of men chosen for the purpose, and if possible appointed for life or good behavior, but if not, for extremely long terms. Such appointments should carry good, high salaries, so as to command men of the very highest ability, intelligence and character.

A state board should have full power to regulate rates, service and financing, and no company should be allowed to establish business until it has obtained authority from the state board. With this kind of regulation in which the investor as well as the consumer is protected, and justice given to both, the business will take on a character of such greater stability as to enable it to obtain its money at substantially as low a rate as municipalities can accomplish.

When this condition obtains, as it is sure to do in time, private ownership under scientific public regulation will afford the most advantageous method of serving the people with public utilities other than those having to do with health and sanitation. It will provide them with all the advantages possessed by municipal ownership and none of the disadvantages, such as political management, inability or unwillingness to make extensions, etc.

Troubles Affecting Municipal Utility Plants.

V. H. Francis, superintendent of the municipal water and light plant, at Kingfisher, Okla., read a paper before the Oklahoma Gas, Electric and Street Railway Association, at its recent annual convention, in which he dealt with some of the troubles which afflict the municipally owned utility. His position entitles Mr. Francis to speak with authority and his remarks are particularly interesting on that account.

He said at the start that such plants "are not, as a rule, a success." One reason of this he found was that the people "often elect the most incompetent men as councilmen or city commissioners," through political manipulation. Continuing he said, in part:

"To better understand the conditions and business methods that exist in the municipal plant that tend toward a failure, let us contrast them with the same capacity private corporation public utility. The latter plant has but one manager, not an amateur, but a specialist. He is not only a thorough business man and well posted on all the modern business methods of his utility, but he has considerable working knowledge as a mechanical and electrical engineer.

If his plant is of any magnitude he has a superintendent who is a first class mechanical and electrical engineer. Only faithful, competent, and conscientious working men are employed in the operation of such a plant. This manager is personally responsible for the success or failure of his plant, and as the plant's failure would mean a financial or reputation failure, or both, to him, he puts forth every effort possible to make his plant a success. His business methods are modern, effectual, and right to the point. He has efficiency tests made in every department of his plant, and if there is poor economy the cause is detected and the necessary changes are made to give the best possible efficiency. If he and his superintendent encounter problems they cannot solve they invite the consulting aid of reputable engineers and, as a result, they have the most efficient plant possible. Above all, they know what their product is costing them and sell it to make a legitimate profit.

Now, as to the municipal plant, poor thing, it ought to fare well, as it has from three to a dozen managers, and they are the regularly elected city officials. They are grocerymen, barbers, butchers, blacksmiths, real estate dealers, liverymen, druggists, retired farmers, firemen, etc. If it should so happen that any one of the entire board had any knowledge whatever of the utility business his ideas would be out-voiced by his co-workers.

To make a long story short, the regular elected city "Dads" may be able to handle successfully the streets, alleys, parks, etc., of their city but they are not competent to make a success of the utility plant. Is it any more reasonable to assume that a butcher would make a success of the jewelry business, or the barber a successful physician, than to assume that three or a dozen men of all vocavations, and many of them masters of none, would make a success of a public utility? I say emphatically, No. And just as emphatically that, as long as city councilmen or commissioners try to manage the municipal plant, it never will be a success.

The official body of a municipality employs a superintendent and in a way puts him in charge of the plant. Many times he is a particular friend or relative of the city official and knows but very little more about the plant and its business than does the city official who employed him. Many of them have been linemen or inside wiremen, and may be good ones, but they are exceedingly lacking in business methods and ability.

The chances are his ability as a purchasing agent is very poor and consequently he stocks up with a lot of unusable and expensive material. He is, however, not the only purchasing agent for the plant. Every city official and every employe is likewise purchasing agent, with the result that the city pays a great many unnecessary and exorbitant bills. Many purchases are made through influences of which we may draw our several conclusions. The superintendent makes costly extensions and repairs through his lack of ability to make the proper calculations and designs.

But the superintendent cannot be blamed altogether for such conditions. All of his plans and ideas must be approved by the city officials, together with every petty officer of the city and it is a safe guess that, no matter how meritorious they may have been originally, by the time the three or more officials have discussed them and they have been made to conform to the ideas of such bodies, they have very little merit left. Can we imagine what the result would be if a physician should call into consultation on his cases this board composed of barbers, butchers, etc.?

The average so-called superintendent of the municipal plant is not a superintendent but a working foreman. He is expected to perform all duties in connection with the plant and to satisfy the whims of all. If he knows his business, is energetic and tries to put the plant on an economical and paying basis, if he accomplishes this he will necessarily have to tell one or more of the city officials where to 'head in' and will arouse the ill-will of many consumers.

When the city officials do employ a competent superintendent they will not act on his recommendations and judgment if contrary to their views and, if he persists in what he knows to be the best business and engineering practices, they fire him and get another to repeat the same proceedings. This makes the municipal plant a training school for superintendents, which school is very costly to maintain.

The superintendent cannot effect very creditable results due to his help being men with a 'pull' with the city officials who are many times trying to undermine him and get his job. The new business department is almost obsolete. Each member of the council or commission by virtue of being elevated to the position, feels endowed with all ability to do any engineering project in connection with the plant, no matter of what magnitude, and consequently spends bond issue upon bond issue and accomplishes nothing.

Is it to be wondered at then, that taxes are so high on property in towns and cities which own their own plant, and are we not justified in assuming, and have we not produced conclusive evidence that municipal plants are as a rule not successful?"

New Construction by Florida Company

The Arcadia (Fla.) Telephone & Light Co., Ed. Scott, general manager, has just received a large consignment of cable for its new underground system which will be laid throughout the business portion of the city. Extra equipment has just been added to the switchboard in order to take care of new subscribers. The Wauchula exchange of the Arcadia company is also being rebuilt in order to take care of the largely increased business.

Pennsylvania Bell Regular Dividend.

The Bell Telephone Co. of Pennsylvania, has declared the regular quarterly dividend of 1½ per cent., payable October 15 to stock of record October 4.

In the Rural Line Districts

Geo. Johnson, of Wray, Colo., is the new line man for the Wray Telephone Co. here and at Trenton, during Mr. Myers' stay at the hospital.—Stratton (Neb.) News.

A new switchboard is installed at the telephone office, Chas. Quinny, of Loyal, and C. Mess, of Colby, doing the work. Several new telephones can now be put in and there will be better service all around.—Spencer Item in Marshfield (Wis.) Times.

Line 6 of Prairie Farm, Dallas and Ridgeland Co-operative Telephone Co., has been somewhat on the bum lately. Andrew Rye, lineman, was trying to discover the cause of the trouble Wednesday.—Barron (Wis.) Shield.

A very careless automobilist made an assault on telephone pole "B104" Monday night, when his machine hit the same without cause or provocation, the said pole being left in three pieces instead of one—one piece in the ground, one in the air hanging to the wires, and one piece about 12 feet in length lying prone on the ground. All that is left to tell who made the assault is a broken wind shield, a cigarette and a reminder of St. Louis' best and a wobbly track leading east. It is a wonder that some one is not in the hospital after the affair.—Magnolia (Minn.)

"If you live in the past you pay high rent."

For local distribution and drop wire copper is a *thing of the past* and Copper Clad is now standard for this work.

Its use effects large savings on account of low first cost and through the long years of service it will render, combined with low maintenance charges and decreased interest and tax charges.

It's mechanical superiority insures a line that is in service all the time.

"Copper Clad is the wire that don't come down."

Manufactured exclusively by

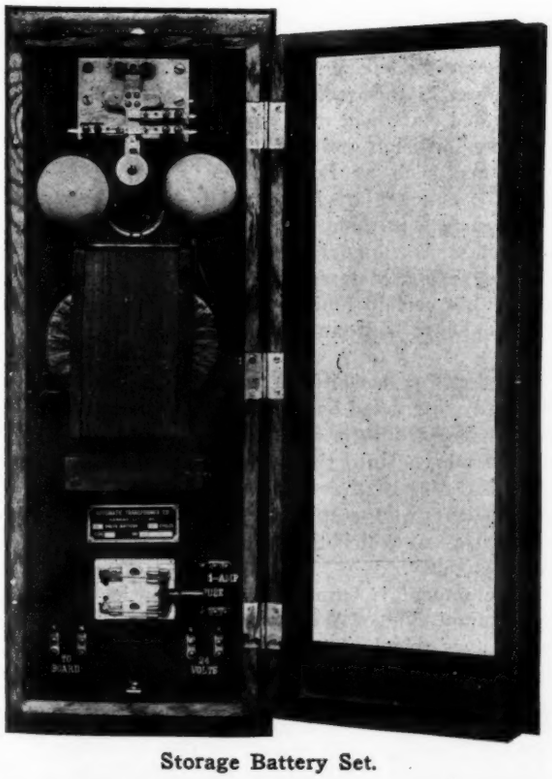
DUPLEX METALS COMPANY

CHESTER, PENNSYLVANIA

Trade Mark "Weld Clad"

CHICAGO OFFICE
853 Peoples Gas Building

NEW YORK OFFICE
30 Church Street



Storage Battery Set.

"No More Bell Troubles and Livery Bills"

The Automatic Transformer Co.,
Kansas City, Mo.

Gentlemen:

As we bought one of your Ringing Transformers three years ago, we thought it might be of interest to you to know that it is still in operation and doing fine work. We have hardly had to open the door since installing, as it NEVER GETS OUT OF ADJUSTMENT on account of no spark to burn out the platinum points.

IT IS VERY ECONOMICAL ON BATTERY AND WILL RING OUT WHEN OUR SUBSCRIBER CANNOT RING IN; DOES NOT POLARIZE THE BELLS, IN FACT WE HAVE NO MORE BELL TROUBLES WHICH USED TO COST US A LOT OF MONEY IN TIME AND LIVERY BILLS.

Very truly yours,
THE BELLEVILLE INDEP. TEL. CO.,
Belleville, Kas. By H. L. Pierce, Mgr.

LIKE RESULTS CAN BE HAD IN YOUR EXCHANGE. Write today for catalog and copy of "They themselves have said it," containing scores of letters like the above. This advertisement will not appear again until accumulated orders have been caught up.

The Automatic Transformer Co.

407 Broadway : : Kansas City, Mo.

COMMENT ON INTERSTATE ACCOUNTING PLAN.

(*Continued from page 556.*)

participating companies in such through continuous transmission are subject to the provisions of the act.

(c) If two or more lines are connected so that a person within one state, territory, or district of the United States talks with a person at a point without such state, territory, or district of the United States, or so that a message is transmitted directly from a point within a state, territory, or district of the United States to a point without the same, the transmission of messages in this manner constitutes interstate commerce and brings all of the participating lines within the purview of the act. . . .

(e) Such telegraph and telephone companies subject to the act are also governed by the provisions of '. . . section 20 thereof respecting the keeping of accounts and memoranda and the making of reports to the commission." (I. C. C. conference rulings, bulletin No. 5 [1911], 99.)

According to data compiled from the records on file with the Railroad Commission of Wisconsin, of the 648 telephone exchange units making reports for the year ending June 30, 1910, 529 will furnish annual reports to both the federal and state commission under the provisions of the above ruling. Of this number eight have physical plants extending across the state line, twenty-five have switchboard connections with companies whose physical plants exist in two or more states, while the remainder are sublicensee exchanges under definite agreement to handle toll business, whether intrastate or interstate in character.

That portion of the telephone business over which the federal commission has jurisdiction in cases involving reasonable rates or discriminations consist of (1) long distance or toll business between originating and destination points located in different states, and (2) exchange business in such rare instances where an exchange area exists in two or more states. This proportion of the business is small compared with the business of a local or intrastate nature. It is noted from the latest census data on telephones that, of the commercial business transacted in the United States in 1907, only 252 million odd messages of a total of 11,231 million odd messages, or 2.2 per cent., are for toll as distinct from exchange business. These results do dot include mutual systems or Independent farmer or rural lines, practically all of whose business is local and not interstate. The telephone is essentially a municipal utility and in importance this portion of the total business far exceeds the common carrier or non-exchange business. (Special reports of the Bureau of the Census, telephones 1907, 56.)

In view of the extensive jurisdiction of the Interstate Commerce Commission as regards the determination of what shall constitute a uniform classification of accounts, and the limited application of such information to interstate business, it is urged that in drafting such a classification, consideration must be given primarily to the needs of a state commission entrusted with the regulation of rates and service of what constitutes by far the greatest part of the telephone service, the municipal utility or local traffic business.

A precedent in this respect has been established in the accounting classification of electric railways, in the regulation of which many state commissions had prior jurisdiction.

"This classification of operating expenses provides an alternative method for the treatment of depreciation of way and structures and equipment. It seems appropriate, in view of the fact that the responsibility for the administration of accounting rules relative to electric railways rests so largely upon the railway commissions of the different states, that the orders of the respective state commissions with regard to depreciation should be accepted as controlling orders rather than the order of the Interstate Commerce Commission." (Introductory letter, I. C. C. classification of operating expenses of electric railways. First issue, 1908, 9, 10.)

Aside from the desirability of procuring an accounting classification applicable to all purposes and suitable for all telephone companies, it is highly desirable that telephone utilities be not required to prepare and submit different reports to the federal and state commissions. To the smaller company the burden of making reports is especially cumbersome and should not be duplicated.

II. Proposed Classification Will Not Supply Sufficient Information to State Body.

The proposed classification provides for the setting up of six annual statements.

1. A balance sheet statement or statement of assets and liabilities.

2. A statement of fixed capital giving in detail the investment in the property.

3. An income statement giving operating income and expenditures, non-operating income and expenditures and deductions from the resulting gross income.

4. A corporate surplus and deficit statement disclosing the action taken by the stockholders in the disposal of surplus.

5. A detailed statement of operating revenue accounts showing revenues from exchange, toll and miscellaneous services closing into the income statement 3.

6. A detailed statement of operating expenses closing into the income statement 3.

Three classes of utilities are provided, class A being companies with average annual operating revenues exceeding $250,000, class B being companies with operating revenues of from $50,000 to $250,000, and class C being companies with operating revenues of from $5,000 to $50,000.

The class C accounting requirements are a simplification of those provided for class B which, in turn, are simpler in form than those provided for class A companies.

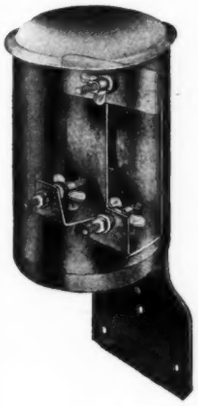
The instructions provide that companies are required to provide a separation of "fixed capital," "operating revenues," and "operating expenses" by separate exchange systems and toll systems, but are not required to give publicity to these records unless requested by the commission.

Comment in this memorandum is directed principally to the detailed statement of operating expenses and incidentally to the inclusion under 3, the income statement, of certain items, such as rents, properly a part of operating cost. No changes are suggested in the greater portion of the accounting procedure provided.

For class A companies the information furnished in the operating expense statement is sufficiently detailed to provide, within certain limitations, operating costs which may be grouped to suit any particular purposes or point of view.

For class C companies, in which the state commission is principally interested because of the predominance of intrastate business, this is not the case and the essential details are merged into single primary accounts. It is urged that the choice of these accounts must be determined not by precedents or the convenience of a single company, but by the uses to which the information called for will ultimately be put.

Our comment is based upon the experience of the Railroad Commission of Wisconsin, which has exercised jurisdiction over telephone companies since July 11, 1907, and which has for the last four years been aided in its work by a uniform classification of accounts. For the period ending June 30, 1912, this commission has disposed of 59 formal cases and 550 informal cases relating to telephones. Of the formal cases 42 relate to reasonableness of existing rates, 34 being applications for increases upon the part of



The Arrester that is getting the attention—

WHY?

Because it is killing that expense of making long drives over party lines looking for a partially grounded carbon, the trouble that is so often difficult and expensive to locate. This accounts for this arrester finding its way into almost every rebuilding order. The day of lightning trouble is passing. Write for particulars and prices.

Metallic Lightning Arrester Company
Winona, Minnesota

MILLIONS Of Dry Cells Are Handled In This Territory

FRENCH Telephone Cells

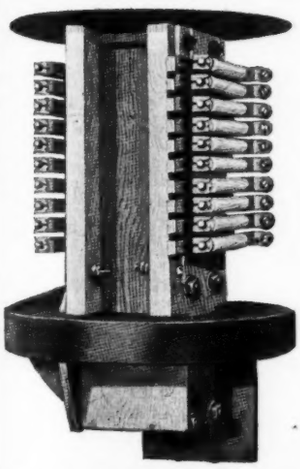
Are Manufactured and Shipped
Direct from Madison, Wis.

There is no reason why the dry cells *you* use should get old in transportation and stock rooms before you install them.

Your orders will be shipped the day received.

Send for new price schedule.

FRENCH BATTERY & CARBON CO.
Madison, Wis.



GIVING your subscribers the best service, and at the same time running your exchange the most economically, demands that your distribution be the best. We maintain that our

Type A Cable Terminal

is the best, and recommend your giving it a thorough trial. Simply designed, a very efficient flexible distributing system. Embodies distribution, protection, pothead, pothead wires and supports—all in one. No balconies or wooden houses needed—weatherproof.

Write for more information.

Southern Indiana Electrical Co.
New Albany - - - Indiana

TELEPHONE WIRE

We Guarantee
Greatest Efficiency
Longest Life
Most Satisfactory Service
Lowest Cost of Up-keep
In the Use of our wire.

Write for FREE SAMPLE Make Test and Comparison

Approved by Leading Institutions of Technology and Telephonic Science. Handled by most representative Jobbers and Supply Houses.

Indiana Steel & Wire Co.
Muncie, Indiana.

the utility, and six being complaints upon behalf of users that present rates were extortionate.

Of the 550 informal cases the majority relate to questions affecting particular rates or contracts and these do not include a large number of inquiries relating to adjustments in schedules of rates disposed of by correspondence and not docketed. The scope of inquiry of the commission as to rates has included:

a. Schedule as a whole, entire companies.
b. Schedule as a whole, separate exchanges.
c. Individual class rates for business, residence and rural services.
d. Toll rates between specific localities.
e. Individual class rates for one party and many party service.
f. Individual class rates where users own subscriber equipment.
g. Increase of exchange rates beyond exchange area.
h. Optional yearly contract for exchange and toll service in two localities.
i. Charge for physical connection between competing and non-competing exchanges.
j. Prorate of revenue under sub-licensee contracts.
k. Additional charge to guest rooms in hotels.
l. Discounts and penalties.
m. Part year contracts.

In addition there have been disposed of numerous questions of classification of separate services, all of which affect the monthly bill of the individual user. (See: Commission Telephone Cases, Vol. I. 1907-1910, index-digest 679, compiled by the American Telephone & Telegraph Co. legal department, New York, June, 1911.)

In disposing of such litigation the Wisconsin commission has made constant use of its uniform classification of accounts for telephone utilities. This has been particularly necessary since it is impracticable to make a separate audit and examination of the company's books in every case, and since the large majority of cases affect companies whose gross earnings are small.

DISTRIBUTION OF TELEPHONE COMPANIES.

Affected by Decisions in Formal Cases According to Gross Yearly Operating Revenues.—W. R. C. R., January 1, 1908, to June 30, 1912.

Over	$250,000	12	6	1	5
$50,000 to	250,000	2	1	..	1
25,000 "	50,000	1	..	1	..
15,000 "	25,000	1	1	..	..
9,000 "	15,000	4	4	..	..
6,000 "	9,000	11	9	..	2
3,000 "	6,000	10	8	1	1
Below	3,000	18	13	1	4
Total		59	42	4	13

The annual returns under the commission's uniform classification of accounts have been utilized principally to determine the financial condition of companies concerning which litigation as to rates and service were in progress; to determine estimates of the cost of separate services and to make unit comparison of the expenses of the separate processes in furnishing service. Returns have now been received covering four years of operation and the data gathered, supplementary to special investigations as to the cost of operation under a diversity of operating conditions, has been of great value to the commission in its work.

It is generally recognized that the cost of furnishing telephone service, including depreciation and a fair return upon the investment, is an important element of the telephone rate. Factors other than cost, such as competition, value of service, etc., are of varying importance, dependent upon local circumstances, but are qualifying rather than a fundamental factor affecting the rate. Where telephone service is conducted for profit, it is difficult to conceive of a rate which has not been based upon some consideration of the net revenue it will yield.

Whatever the merit to the controversy as to whether it is practicable to measure specific costs as against specific services in determining the reasonableness of particular rates, experience has demonstrated that conditions of operating the telephone plant in separate communities are sufficiently dissimilar to make inequitable the test of *relatively reasonableness*, and that *what the service is worth* is a far more vague and intangible factor than in the railroad rate where the transportation charge has a certain relation to the price of the commodity transported. That the cost of service is an important and frequently a controlling element in telephone rate cases, is evident from an examination of briefs and reports presented in rate cases.

(See reports on cost of telephone service May 9, 1910, D. C. and Wm. B. Jackson and Arthur Young & Co. as to rate situation in Chicago; reports on investigation of telephone service May 2, 1911, Wm. J. Hagenah as to rate situation in Chicago; Public Service Commission, of Maryland, annual report, 1911, appendix VI, as to rate situation in Baltimore; Board of Public Utilities, Los Angeles, Cal., report June 30, 1910, p. 68, 105, as to rate situation in Los Angeles; report of citizens' committee of inquiry as to local telephone rates, municipal plant, March 26, 1912, Winnipeg, Man.)

If it is conceded, therefore, that the primary purpose of a uniform classification prescribed by a commission with regulative powers is to supply the needs of that commission in the administration of its duties, some consideration must be had to the features of telephone accounting pertinent to the determination of the reasonable rate.

Our criticism of the proposed "operating expense" statement, especially as applied to class C companies, is that it does not furnish information as to the total cost of each successive step or process utilized in providing telephone service. Such information is essential to the determination of questions affecting reasonable rates, to the study of efficiency of operation, and to the compilation of statistical units of comparison.

Specific objections are urged to three features of the proposed classification:

1. The grouping of operating expense under the primary expense headings provided.
2. The treatment of rent payments as a deduction from income rather than an operating expense.
3. The merging under "maintenance" of certain items of expense rather than their inclusion under operating accounts.

It is realized that question will be raised as to whether the changes requested in the classification of operating expenses are in keeping with sound accounting principles, and whether the changes will mean additional labor and expense to companies in conforming with this feature of the classification. Both of these matters have been entered into as fully as a limited presentation of the points at issue will permit.

(To be continued.)

Independent Gains When Bell Raises Rates.

Over 125 contracts for the immediate installation of telephones have been written by the Federal Telephone & Telegraph Co. in Holley, N. Y., and a considerable number of contracts have been made to furnish instruments later in the fall. October 1 was the date set for the raising of rates in the village by the New York Telephone Co.

About three weeks ago a meeting was held by the patrons of the Bell company and it was unanimously voted not to accept the raise. The Bell company is now busy taking out telephones, and a large number of Federal employes are making new connections at the rate of ten or twelve a day.

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Quality
Service
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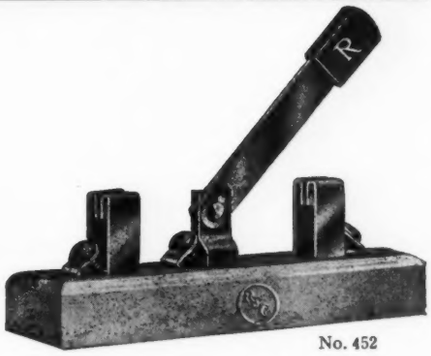

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Reliable Electric Company's

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Manufacturers Solely of

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Write for Prices and New Catalog

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No. 456

EVERY PROCESS

of the manufacture of **Roebling Double Galvanized Telephone Wire** is conducted with one end in view —to produce durable, uniform wire of high conductivity.

The metals used are carefully selected, subjected to exacting tests to prove their quality, and **protected** against rust by real galvanizing.

John A. Roebling's Sons Co.

TRENTON, N. J.

We make also Hard Drawn Copper and Copper Clad Steel Wire, Wire Strand and Telephone Cables.

PENNSYLVANIA REGULATIONS.

(*Continued from page 559.*)

the top of the same the roadway shall be replaced to correspond to existing construction.

10. All conduits shall be constructed so as to allow a fill of 4 ft. between the top of the conduit and the adopted grade line of the road. Should future revision of alignment or grade affect any of the poles, conduits or other construction, the company shall, at its own cost and expense, relocate such poles or conduits or other construction, upon notice from, and in a manner which may be specified and directed by the state highway commissioner.

11. The conditions, restrictions and regulations hereinabove cited shall also govern all excavations, openings and trenches for the purpose of making repairs to any poles, pole lines, conduits, or other structures or property and appurtenances thereto belonging.

12. During the period of time within which any state highway is in the hands of a contractor and under process of construction, and until said highway or road is accepted by the state highway commissioner, no company will be permitted to enter upon said highway for the purpose of erecting poles or laying conduits, or for doing any other work whatever, which might interfere with such contractor in the performance of his contract, unless said company shall file with the state highway commission a duly attested certificate, signed by the contractor constructing said road, which certificate shall contain said contractor's consent to such proposed operations of such company within the lines of said state highway or road, together with a satisfactory waiver, release and quitclaim to the commonwealth of Pennsylvania of all damages and of all defenses whatsoever for delays, by reason of such operations and occupation of said roadway by such company, or from any cause whatsoever resulting by reason of such operation and occupation.

13. All work done by any such company shall be under and subject to the directions, supervision, inspection and control of, and shall be carried on under the foregoing conditions, restrictions and regulations to the entire satisfaction, of the state highway commissioner, or his authorized assistants or representatives, and the actual expenses entailed or occasioned thereby shall be borne and paid by such company monthly, or at the completion of the work, as the state highway commissioner may elect.

14. If at any time any of the poles belonging to such company shall fall upon or along any of the state highways or roads, from any cause whatsoever, such company shall have the same removed or repaired within 48 hours after notification to such company, except at times of extraordinary happenings, when extension of said time limit may be given by the state highway commissioner.

15. All poles that may be erected shall be numbered, and said number, together with the initials of such company, shall be plainly stenciled thereon by said company.

16. After each and every excavation made by any company in any of the said state highways or roads, incident to the erection, repair, resetting or removal of any of the poles, manholes or conduits to be erected, the company shall, under the supervision and direction of the state highway commissioner, and to his entire satisfaction and acceptance, and at the cost of such company, restore such road to as reasonably good condition as it was in immediately prior to such excavation, and so long as it operates and leaves in place such pole lines upon or along said state highways or roads, it shall maintain, and keep in good order and repair, the said poles, wires and other appliances, and shall save, indemnify and keep harmless the commonwealth of Pennsylvania of and from all damages and expenses arising from its failure to so restore said state highways or roads, or to so maintain said poles, wires and other appliances and their appurtenances and from all damages that may result from the operations of installing, constructing, repairing and maintaining any poles, manholes, conduits or other appliances and their appurtenances.

17. In the event of failure by the company to perform and comply with any of the conditions, restrictions and regulations above set forth, the state highway commissioner may revoke and annul any permit and order and direct such company to remove its structures or property from the road or roadway within the area affected by such failure to comply with said conditions, restrictions and regulations, and in the event of the refusal by said company so to do, the state highway commissioner may take possession of and remove any poles, pole lines, conduit or conduits or other structures or property and their appurtenances, and restore said road to its former condition at the cost and expense of such company.

18. It shall be a further condition, restriction and regulation that before commencing any work of erection or construction of any poles or pole lines or the laying of any conduits upon or in any of the state highways or roads, the company shall make application to the state highway commissioner for a permit so to do, which application shall specify the proposed work, and attached thereto shall be duplicate blue prints or sketches showing the proposed location of such poles, pole lines, or conduits, whereupon permits may be issued under and subject to the foregoing conditions, restrictions, regulations and modifications or amendments of the same that may be made by the state highway commissioner from time to time, which shall govern all work done or to be done thereunder. It shall be a further condition, restriction and regulation that, before any permit is issued and before any work whatever is done by any company, there shall be filed in the office of the state highway commissioner a bond, duly executed and delivered, in the sum of $25,000, conditioned upon the faithful performance of all and every one of the conditions, restrictions and regulations above prescribed or prescribed in such permit or permits, which bond shall first be approved by the state highway commissioner.

Building Lines in the Philippines.

The telephone is rapidly penetrating the fastnesses of the Philippines, even the remote portions of the islands now being connected by the magic wires. S. B. French, Jr., of Menominee, Mich., in a recent letter to his home folks, gives a little idea of the difficulties under which the work is being done.

In a letter dated at Zamboanga, he says, in part:

"I have at present about sixty 'G' string Moro hombres working for me constructing a new telephone line to the San Ramon prison farm, which is about 25 miles southwest of Zambo. We call Zamboango Zambo' for short. Then when I complete this piece of work there is no telling what the chief will have up his sleeve for me next. On this job we are cutting a new trail through bamboo and cocoanut groves. I am the only white man on the job, though we have a pretty good sort of a Spaniard as foreman over the Moros.

"But cutting a new trail with bolos is rather a primitive mode of procedure. The object is to connect this penal farm at San Ramon with the city of Zamboanga by long distance telephone system."

Southwestern Bell Change of Name.

The Southwestern Telegraph & Telephone Co. proposes to increase its capital stock from $20,000,000 to $100,000,000 and to change its title to the Southwestern Bell Telephone Co.

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Telephony Publishing Company, Monadnock Block, Chicago

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Hall's Hand-Book of Standard Telephone Construction Methods

By Frank B. Hall

The Most Practical and Most Helpful of all Telephone Books. Over 280 pages of specifications; 250 pages of illustrations. Pocket size, loose leaf, bound in black leather. Price, $4.00; postage prepaid. CONTENTS: Specifications Exchange Aerial Construction. Class "A," "B" and "C" Standard Pole Lines, 22 Sections.

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Specifications Toll Line Construction—Class "F" Standard Pole Line, 5 Sections.

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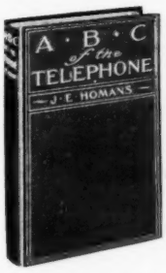
The A. B. C. of the Telephone

J. E. Homan, A. M.



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The Telephone Inspector and the Troubleman

The Fifth Installment of a Series of Articles Which Deals in an Elementary Manner With Many of the Problems Encountered in the Operation of Small Exchanges—The Installation of Subscribers' Sets—A Case of Cross Talk

By A. E. Dobbs

George seldom appeared at the office during the next two or three days, receiving and giving all instruction by telephone. In his absence the manager secured several new subscribers, and accordingly sent Will and the new lineman, Tom, to connect them in.

The new man did several things that Will had never seen done before; so when George came in the questions he asked caused the latter to go out and inspect the work, taking both Will and Tom with him.

"See here," he called to Tom, who was out in the street, "you have brought those wires to the house and down as far as the cellar window with bare wire and porcelain knobs. Now, we don't do our work that way. Yes, I know some of the companies do work that way in order to save annunciator wire, but it is out of date. No, I am not finding fault with you, for you understand line work, but I want to show you a better method than the one you have used here.

"Do you have any idea that those knobs, there are eight of them, improve the appearance of the house, or the insulation of the line? There is still another objection. These bare wires down the side of the house are in easy reach of the everyone, even the children, and as we have several kinds of high potential circuits in this town, a broken wire might be the means of killing someone. In the future do not bring bare wire down the side of the building nearer than nine feet from the ground, or near enough to any window from which people could reach it.

"Now this inside wiring is done with annunciator wire and looks like a boy's work. William, did you do this?"

"Yes," replied Will.

"Well, you certainly did drive staples enough on that wire to hold it down for all time. Half a dozen would have been enough, and I'll bet you have at least three dozen in this short run of about twenty feet. They are driven down so hard that it is a wonder you did not cut the wire in two. Remember, in the future, that although wood may be dry on the outside, it is liable to be more or less damp on the inside. So many staples pressing hard against the wire, with their points reaching into the wood, will lower the insulation and perhaps increase the noise on the system.

"What is this? Two wires under one staple and that staple driven down hard! Pull that staple out and separate those wires. It's true, I have sometimes placed two or more wires under one staple, but when I did I never drove it more than half way in, so that the wires were perfectly free to move; that is, they merely lay in the staple, but were not held by it. In fact, I nearly always drive my staples in that way. I have made runs of 300 feet and the only staples that held the strain on the wire were at the ends. In this way the staples do not cut the insulation of your wire.

"Of course, this cellar is very dry and so are those joists, so that there is no particular harm done, but don't do it that way any more.

"Here," said he on going upstairs, "is another thing to which I wish to call your attention. Why did you bring this wire up over the baseboard and outside the wall to reach the telephone, when you could just as well have dropped down inside of the wall? Don't you see that in that way the wires would be out of sight and make much neater work? Now, rip that wire out and I will show you how to do that. Here, take your quarter-inch bit and bore a hole right into that wall through the lath and plaster. That is good. As the hole you bored through the floor is almost directly beneath the one you have just made, you can use that as a guide in getting your location in the cellar. Bore from the cellar upwards about three inches inside of that other hole; bore through the floor and studding plate.

"All right. Now you see all we have to do is to tie a small weight on a string and shove it through this hole right over the instrument, work it along until you feel the weight touch the studding plate. Now go below and take a piece of iron wire, say two feet long; make a short hook on the end of it, shove it through the hole you made from the cellar and fish for that string. There, you have caught the string; now pull it through. Never mind about getting that end; if you have the string, tie the ends of your wires to it and let them come up. Now we have the ends of the wires at the telephone. We will pull them up, take a foot more than we really need and shove them back again. Now, doesn't that make a neater job? Remember that trick.

"Here is a case," remarked George, upon going to another house where the wiring was not finished, "where you do not need to go through the cellar at all. Go to the roof and bring your house wires into the garret and drop them down between these walls right to the instrument. Bore the hole close to the knobs and use no staples on the outside at all, and let the wire lie loosely between the joists. No, you really don't need any staples at all, though you might drive one over each wire where it drops down the partition, if you are afraid it will be disturbed. There, it didn't take over fifteen minutes to do all that. That was easy."

They then went over to the next house where George started his criticism with: "Here is a brick house and we cannot fish wire between the walls. In some brick houses there are furring strips to keep the plaster away from the outside walls, and a long No. 12 steel wire with the end looped back to keep it from catching in the wall, can be pushed down between these strips from the garret. It can then be found with a fish wire down below. In this case, however, we can't do that, so we must plan some other way. Here! Bring the line wires over to this window. Drill a hole in the brick wall about four inches deep, fit a plug into it, and fasten a porcelain knob there with a 3-inch screw and do the same for the other knob.

"Now let us look around inside. Yes, I see they want the instrument placed over in that corner. No, we don't need to go down to the cellar to get there. Bore a hole in the upper corner of this window and bring the wires in through it. You see there is a picture molding all around this room and we can tie those wires together and lay them all the way around the top of that picture molding, where they will never be seen. Now take a plumb line and find a spot right beneath the molding so that the wires won't have to come down on the outside of it.

"Put a little tape around the wires where they drop down through that hole you have just made, as an additional protection against dampness or abrasion from the plastering Twist those wires neatly together, pull them down tight enough to straighten them and staple to the top of the telephone. There, that makes a very neat job, though there is a wire molding sometimes used for this purpose that conceals the wire altogether, but we generally make people pay extra for that kind of work."

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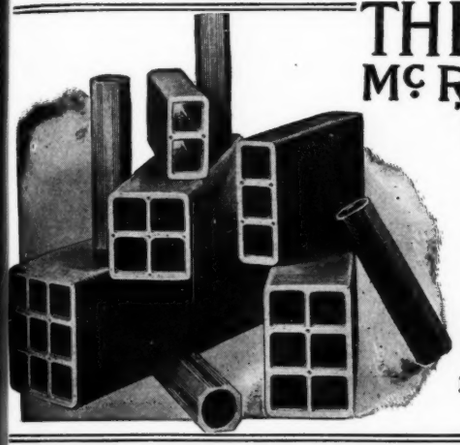

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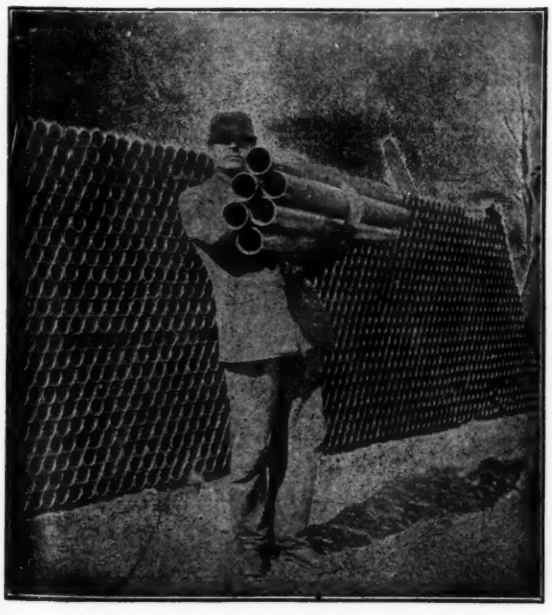

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Please tell the Advertiser you saw his Announcement in TELEPHONY.

"What have we got here?" George exclaimed, as they came to a large grocery store. "Our only way to get in here is to bring the wire to the back of the building, down the inside and into the cellar. No, do not run wires where boys are liable to pull them loose and break them. Here is a damp cellar and you must not use any annunciator wire at all. Get some of that rubber covered duplex wire and use it from the line to the instrument. Always remember that annunciator wire should be used only in clean, dry places, and if you have a run of more than five or six feet outside of a building use rubber covered wire also.

"Now here," he continued, as they arrived at another house, "you came down through the cellar and used up a lot of wire when you could have bored a hole right through the side of the house just above the instrument and reached the line wires with about ten feet of duplex.

Upon going inside the house George glanced at the telephone and evidently did not like its looks for he said, "Now this telephone seems to me to be placed rather high. Why, the lady of the house will have to stand on a box to reach it. Lower it so that she will have no trouble when talking. When you put a telephone in a residence again, find out who of the family will use it most frequently and adjust its height to accommodate them. It will frequently be noticed that a short woman has a very tall husband. But no matter, you adjust the telephone to her height when standing, and if her husband wants to use it he can stoop or sit down on a chair. You may not know it, but nine-tenths of these residence telephones are put in for the benefit of the women folks, and as long as they are pleased, the instrument will stay there.

"Now a few directions as to bringing the drop wires over from the pole line.

"In the first place keep your wires up as high as possible, and in the next place spread them out at least two feet apart, unless you use weatherproof wire to keep them from getting crossed.

"Thirdly, do not pull the wires tight between the pole and the house. This not only tends to pull the pole out of line, but a tight wire makes so much noise that it is a regular nuisance. Then again in winter they are quite likely to break during a cold snap. By spreading the wires out and giving both the same degree of sag, they are not liable to get crossed, even if quite slack.

"Fourthly, brackets are ugly fixtures to place on the side of a house. Porcelain or glass knobs are neater and practically just as good, but do not use too many of them. Very few houses require more than four.

"Fifthly, keep clear from trees as much as possible, and if not possible, use insulated wire through them. Look well after the little things along the line which, although seemingly unimportant, amount to considerable in the aggregate and make 'bum service.'

"Sixthly, lastly, and all the time, make your work look neat and workmanlike, for people judge a company largely by the quality of its work, and we want them to have a good opinion of our company."

George Meets an Old Acquaintance.

"Mr. Wilson," said the manager. "There is a man out in the office looking for work; do you think we could use him for a few days? I think," he continued, "he is rather hard up, and if we can give him some help with benefit to ourselves, we might just as well."

"Yes, I think we can," replied George. "I would like to overhaul that No. 2 cable and find out where all the cross-talk comes from, and we can send him with Tom and Young Butler out pulling up some of these lines, getting ready for winter. That East street lead needs to be pulled up, to reduce the trouble account in that direction. Then there is that farmers' line out on the northwest road to build, and we ought to do it right away. Yes, you can easily take him on for a month with profit to yourself, that is, if he is a good man. Send him around and we will find out what he knows."

George looked attentively at the newcomer for a moment, then advanced and extended his hand.

"Well, I'll be hanged if this isn't Johnston. How do you come to be out here?"

"Ditto," said Johnston. "The last time I saw you was when you and I were working for opposing companies in Newark. We were in opposite gangs fighting for the right-of-way on Broad street, and our side won by about five seconds. Well, well, well, telephone men do get scattered around."

"Let me see, that was about twelve years ago; where have you been since?" asked George.

But why go into the details of the conversation that followed; of the places where they had worked; of the men they both knew; and the country they had seen. For construction men one way or another manage sooner or later to see all parts of this great country.

George put him at work in the shop until dinner time, then helped him find a boarding house, and did all he could to make him feel at home.

"Now," said George when they returned after dinner, "we have a cable in which there is a great deal of cross talk, so bad, in fact, that with one subscriber connected in, you can talk to him over almost any other wire in it. I have been here only about two months myself, and have been so busy with worse troubles that I could not get around to clearing it, but now that I have you here, we will tackle it. Here's a test set, and if you like you can go up that pole and ring in the wires one by one and open them, while I test for leakage. I have never been up to that cable box, so I don't know what you may find there."

Johnston climbed the pole and after one or two tests, in both of which the line rung "clear" from the board, he happened to notice something.

"I have found it," he yelled to George. "Just take things easy for a half an hour or so until I come down."

George could not see what he was doing, except that he took a piece of rubber tape out of his pocket and was industriously working away inside the box. Curious to know what Johnston had found, he went up the pole himself, and found that astute individual busily engaged in rubbing out pencil marks.

Now what had Johnston found? In order to save the expense of binding post terminals, the ends of the cable conductors had been brought under wood screws and washers in a hardwood strip. In order to keep the screws in line, the strip had been heavily marked with a black lead pencil, which, when the wires were screwed down, made a connection between all of them. It was a high resistance connection, 'tis true, for the generator could not ring through it, but still it was low enough to allow the telephone currents to pass from one end of the strip to the other, and to that extent, bringing all the lines together.

When the pencil marks had been rubbed out, the cross-talk was gone.

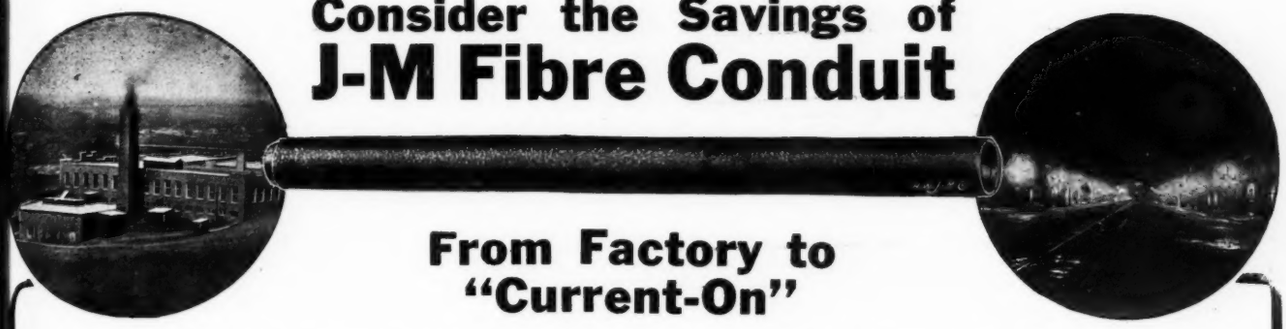
"Now," remarked George, "we want to get a different kind of a strip there, for that is a poor way to connect cable wires, but I may not be able to convince the old man of that. I will report the cross-talk as coming from that strip and see if I can't persuade him to change it. If we can't do any better, we can get some strips of hard rubber with brass clips placed across them, and have the outside connections screwed down and the cable wires soldered to the other end."

"Yes, that would be as good as a regular terminal head," responded Johnston.

"Well," said George, "we got through with that job in less than an hour, when I expected it to take at least a day."

(To be continued.)

Consider the Savings of J-M Fibre Conduit



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Seventy-five per cent of all cable troubles can be traced to damaged sheaths—and this disappears by using J-M Fibre Conduit.

Think what these savings mean! Then remember that you get stronger, straighter, tighter duct, better insulation, fewer and tighter joints, better cable protection, absence of electrolysis, and no fire hazard.

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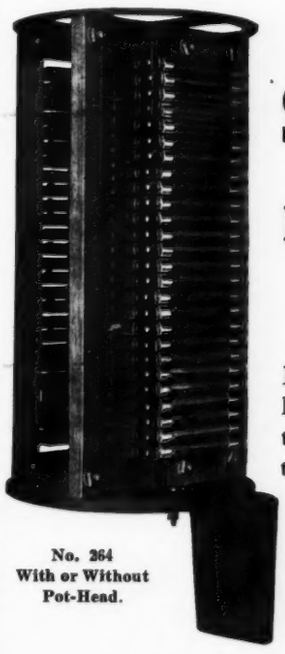

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Practical Subjects—Letters and Discussions

Letters From an Old Timer to the New Troubleman.

Mr. Troubleman,

Dear Friend:—Something more about "Tip Grounds." Line 311 every little while would go dead grounded on the tip side and every time we would start to chase it down it would be gone before we could locate it. Finally it came on one day, and everybody held their breath for fear it would get away before we could locate it

The pair of that line multipled in two boxes with a loop out of one box and nothing out of the other. Those cable poles were hiked as if we were afraid of making a dent in the pole and the fuses were taken out of the box with the loop. As we had the ground just the same, it had either to be in the other box, or in the cable. The multiple box upon being looked over showed nothing out of the way and it looked as if the trouble were in the cable, when a sudden mvement caused by hitting the box, cleared the line and another one brought it back again.

We used a cable box with all the connections inside and by taking off the face of the box, we saw the trouble. One of the connections was loose on the lug, and there was hardly a hair's width between the box and the end of the wire. A little wind or any sudden movement of the box might bring on the trouble. After tightening the nut on the lug, our line was cleared and has been so ever since.

On a dead tip ground you can bet that you are up against something metallic, that is going directly to ground. The exception is an extremely bad lightning discharge, which might pass through the tip side of the carbons in the arrester, plastering them dead together. I have never seen a condenser burned bad enough to give more than 90 per cent. of ground, the bulk of the discharge going to ground through the carbons.

Tip grounds in trees are the least of a troubleman's troubles. Here is one that got me guessing some. A line had a 50 per cent. tip ground. I walked over the line with my usual confidence, and not seeing any convenient thing on the line to lay the trouble to, made another guess, that there was a bad condenser on the line. That was the time I got fooled again, for there were no bad condensers on the line, and no guys. The line was clear when the fuses were out at the cable box. There were some trees, but the line looked clear through them. So I took another start from the cable box. If there had been a fly on that wire, he would have been spotted. But I did not see a fly. I did see where the wire had gotten off a bracket that was on a tree, and was laying innocently against the outside of it. I did not trust its innocent looks so got up and found the trouble. The head of the spike used to fasten the bracket was making a good path for conduction into that tree and to ground. The insulation being worn off the wire, by rubbing against the side of the bracket, furnished the balance of the condition. I tied the wire back on the glass and that line was clear.

A tip ground will sometimes be found in a tree where a sleeve wire has made a path for it. I had a trouble with two lines in the same lead. One had a large sleeve ground, the other quite a large tip ground. The two lines were parallel. I found the tip of one line and the sleeve of the other in the crotch of a tree, both close together. The sleeve current had things very wet and sloppy. The insulation on the tip wire furnished more resistance to the sleeve than the path to ground, so the sleeve got in its work to ground. After it got things working nicely that way, Mr. Tip got water-soaked and began to do things between himself, and the ground tip. Mrs. Sleeve had about all there was of the battery, and of course Mr. Tip in the mix-up got some of himself from the ground. By lifting those two wires out of the bed they had made for themselves, the lines were perfectly clear.

I remember a nice long walk I once had for a dead tip ground. We had a bad line which could easily get mixed up with guys, messengers, etc., so I walked right past the cable box down the line for about two miles all the time watching that tip wire. I had been on the line before so knew which was the tip. I got to the end and found nothing. I came back then and got a test at each arrester, on all the telephones of that line until I reached the cable box. Then I felt like taking a kick at myself for there was my trouble in plain sight. The cable in looping down to go into the cable box, got away from its place and lay lovingly against the line. The pole was double cross armed, the lines being dead ended on the glasses of both arms. You can see how easy a trouble it was and how easy a troubleman I was. I have found the same kind of trouble several times since, but did not go all over the line looking for it. A good hard lesson a few times gets one to thinking that headwork is more healthful for the constitution than footwork, especially on a hot day when it is about 90 degrees in the shade.

On the wire chief's desk, when testing for a tip ground, the amount of ground that you get will also show the same if you throw the short test key. That is, your test will read the same on the short as it does on the tip, whether you have any short on the line or not. I had a dead tip, sleeve, and short, line. I found the iron wires twisted together and one of the wires laying on a guy, dead to ground. If you have any short on the line, a ground on either of the lines will read on both sides. If the short is large and the ground is small, it will read the full amount across. If the short is small and the ground is large, the side not grounded will read the same amount as the short.

In my next letter to you I will try to give you a little information on "Battery and Dead Shorts."

Yours very truly,

Fred Dewey.

TO WIRE CHIEFS AND MAINTENANCE MEN.

Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

Unusual Means for Locating Cable Trouble.

We had inside cable trouble and had it in bunches. It seemed as if we were doomed to always have it, regardless of our efforts to remove the cause. This was the whole trouble: Our answering jack cables were run through the the battery room in a wooden chute. We had often speculated and wondered as to "why" it was ever thus. None of us ever solved it. It was true that an attempt had been made to protect the cables from the battery fumes, but it was an ineffectual one. The cables were covered with paraffine, but it was not hot enough when put on and failed

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THE LATEST EDITION OF THE MOST POPULAR TELEPHONE BOOK

Telephonology

adapted as much to the needs of the man who is beginning at the ground to work up as it is indispensable to one who has already advanced to the position of wire chief, superintendent or manager and realizes that telephone work is so complicated and covers so broad a field that he must be seeking help for the solution of new problems every day. ¶ The new edition is brought completely up to date by the addition of chapters on "Railway Telephony" and "Recent Progress," including Major Squier's system of multiplex telephony, the Automanual system, Automatic systems, etc.; 650 pages, 18 chapters. and profusely illustrated. Telephonology makes a knowledge of telephone practice come easily to the reader.

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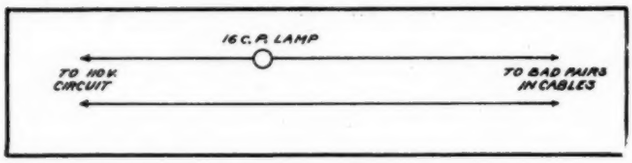
to spread as it should, consequently the fumes penetrated the cable covering and weakened the insulation between the wires.

Trouble began showing up in cross ringing. We could not talk across, and would get a very poor test with the



The Circuit Arrangement for Melting the Paraffine.

galvanometer. Paraffine being over the cables, made it hardly possible to see any trace of trouble, although we measured as accurately as we could by the meter tests. We wished to avoid opening up places where there was no trouble, as that would lay the cables liable to more trouble. Then also we wanted to avoid the unnecessary joints which would be caused by cutting in new pieces of cable.

The superintendent and I stood in the battery room one day looking at the chute for the hundredth time. We had abused the engineer, and wished for the installer. A new "batch" had just come in and we were getting desperate. "For two cents I'd put that 500 volts in there and burn the whole thing out, and then we would have to put in some new cable," said the superintendent. Then there was a long silence. Finally the same idea apparently occurred to both of us at the same time.

"Why not?" I asked.

"No reason why it won't work. Let's try it at any rate."

Half an hour later we had our paraphernalia ready. It consisted of a pair of wires from the 110-volt circuit used for illuminating the switchboard, one 16 c. p. lamp and a socket. The lamp was cut in on the live side of the 110 circuit, and the other side extended to the place where we could reach the ends of the wires that were bad in the cables.

By connecting the 110 volts through the lamp and across a bad pair, we could see a faint glow in the lamp which varied, growing stronger at times. I ran downstairs to see the result and was soon satisfied, for I readily found a place where the paraffine was melting rapidly.

Then followed two days of hard work up against the ceiling, opening up the bad places, insulating the wires with Manson tape, and covering the whole with rubber tape.

We calked the joints in the chute and have had no more of that kind of trouble.

Of course, this is not the safest method one could think of, but it proved very effectual in this case.

Kentucky. R. O. P.

The Explaining of Toll Line Troubles by the Operators.

It sometimes happens that the long distance telephone lines are "in trouble" and service cannot be given over them. A vast majority of toll line troubles are the effect of causes over which the telephone company has no control, such as wind storms, lightning and floods. They are all temporary troubles and are cleared at the earliest possible moment.

During the time the lines are out of commission, subscribers are apt to become impatient and condemn the service because their call is delayed. It is at this time that those in charge of the lines, and who come in direct contact with these subscribers, can do a wonderful amount of good by explaining carefully and clearly to the subscriber the reason of the delay and stating the probable time that the service will be restored. They can also prevent him from becoming impatient by advising him of the trouble at the time he places his call.

Another important thing in this connection is the prompt taking up of the tickets and calls when the service is restored or line comes clear.

The public is sympathetic and reasonable and is very slow to condemn a service or become impatient of delays, provided it knows the service company is doing its best.

In cases of serious accident, where the service will be delayed for a considerable number of hours, a notice should be posted in a prominent place on the switchboard so that subscribers who have placed calls can be called up and advised of the probable delay and asked to hold the call until the trouble is cleared.

It is the little courteous attentions, such as these, paid to the public and subscribers that count and makes a company popular.

Tugs Around New York Dispatch by Telephone.

It may not be known generally that the large railroads centering in New York have a system of tugboat dispatching very similar to train dispatching, says the Telephone Review. Every time a tugboat completes an assignment, the captain goes to the nearest telephone and reports to headquarters. On the other hand, when orders are to be given to the commander of any of the tugboats, they are telephoned from headquarters to the local stations on piers along the water front. A signal, flags by day and colored lights by night, is at once displayed indicating that there is a message. When the tug comes within hailing distance, the message is delivered to it by megaphone and the tug goes on its way. Without the telephone it would be impossible to handle the enormous freight traffic in and around New York as economically and expeditiously as it is done at present.

Texas Association to Meet October 25.

The annual convention of the Texas Independent Telephone Association will be held at Dallas on October 25. The meetings will be held in the offices of the Automatic Telephone Co., in that city.

The following program has been arranged by the executive committee:

Address of welcome, President J. C. Casler.

Response, E. M. Chamberlain.

"Development of North Texas Local and Long Distance Business," C. A. Shock.

"Eliminating Telephone Troubles," O. G. Freeman.

"Toll Line Development in Texas," Buford Adams.

"Keeping in Touch with the Subscribers," F. V. Newman.

"Relation of the Independent to the Mutual," J. L. McCurdy.

"Relation of the Mutual to the Independent," J. F. Parker.

"Central Office Discipline," W. K. McQuown.

"Toll Accounting Between the Different Companies," J. B. Earle.

"Suggestions as to the Best Methods of Handling Through Toll Business," J. M. Henshaw.

"Soliciting New Business," Geo. B. Wellbaum.

It is the purpose of the executive committee to make the question box a special feature of this convention, and to that end it has been placed in the hands of a strong committee. The program was purposely shortened to give ample opportunity for full discussion of the several points it is hoped the question box will bring forth. Every member attending the convention will be expected to contribute one or more questions to the box.

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It is a guarantee of Insulator quality —Service and Fair Prices.

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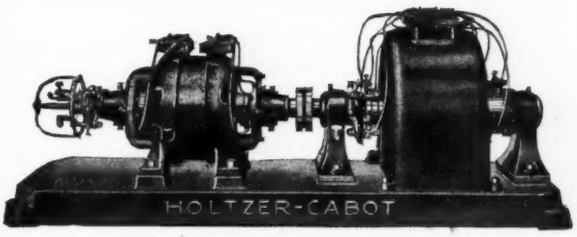
Your dealer can always furnish Brookfield Insulators

The Ding Dong of the Telephone Man

MADE EASY

by the

Holtzer-Cabot Composite Multicycle Motor-Generator



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CONSTANT CYCLES
CONSTANT VOLTAGES

A WAVE FORM BEST SUITED TO
HARMONIC RINGING

MANY IN USE

Write us today for Bulletin 209A

The Holtzer-Cabot Electric Company

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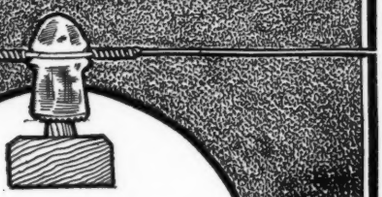

GET HEMINGRAY GLASS INSULATORS

For Best Transmission

The teats on the petticoat, an exclusive feature of Hemingray Insulators, prevent water running to pins and causing grounds.

Hemingray Insulators are all insulation and are unusually free from breakage.

Write for Prices

Hemingray Glass Co.
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Factories: Muncie, Ind.

We Pay Your Repair Bills

Rather a startling statement, isn't it?

Let us tell you about it.

We have such positive knowledge that Chicago Telephones are trouble proof that we bind ourselves legally to pay all repair expense. We pay not only for materials required, but also for the time and expenses of your trouble man while he is going to and from the telephone, and while he is making the repair.

If the telephone is ten miles from your Exchange this expense item might be greater than the price of the telephone. We can afford to do this because the percentage of Chicago Telephones that ever need attention is negligible. During the year ending July 1, 1912, with six hundred thousand telephones in use, this trouble insurance cost us only $274.00.

No other telephone factory dares to duplicate this repair service because no other telephone is good enough to justify it.

Write for booklet entitled "Making Good."

Chicago Telephone Supply Co.

Makers of Telephones and Switchboards

Elkhart, Indiana, U.S.A.

From Factory and Salesroom

Convention: Texas Independent Telephone Association, Dallas, October 25

"The Power of Advertising."

Some time ago TELEPHONY told of the booklet issued by the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y. It was entitled "The Power of Advertising" and described advertising service which the company was ready to give to telephone companies. Among the original users of this service is the Bryson City Telephone Co., Bryson City, N. C.

Recently this company wrote the Stromberg-Carlson company regarding the extremely satisfactory results obtained through the advertising matter which was supplied it. The letter which speaks for itself is as follows:

"I have been using the cuts sent me by your house to good effect. By running one in our local paper each week, we have increased calls at switchboard at least 25 per cent. You understand the more calls, the more essential is a telephone. It pays this company to advertise in our local paper."

The Value of Voltmeters for Wire Chiefs.

The telephoning public is very much more critical with respect to the service it demands than was the case even two or three years ago.

This condition is due to the education it has received owing to improvements in service in large communities and also to advertising campaigns conducted by the various companies. Consequently the daily problems confronting

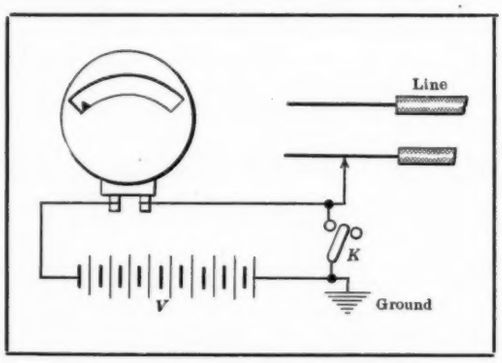

Fig. 1. To Test for Ground.

the managers of all exchanges, whether large or small, are constantly becoming vastly more rigorous.

Many factors have contributed to the increased efficiency of service that has already been acquired; but there is perhaps no more important detail of apparatus or equipment than the voltmeter known as the wire chief's testing instrument. A most satisfactory instrument especially designed and very widely adopted for the purpose of facilitating the duties of wire chiefs is one made by the Weston Electrical Instrument Co., of Newark, N. J. It enables wire chiefs to rapidly and accurately make a number of determinations that are of vital importance to good service. The instruments are usually of the round pattern switchboard type as indicated in the illustrations and are mounted on the testing board.

They are made with a very high internal resistance, the most common specifications calling for a range or scale of 40 volts and a self contained resistance of 100,000 ohms. The instruments are also made with double voltage ranges and for some purposes are prepared in portable form.

There are certain tests such as the measurement of high and low resistances, tests for capacity, and tests for ground which it is of great importance to accurately determine in substantially every telephone exchange. The connections and descriptions of these particular tests are briefly given in order to indicate the serviceability of the instrument.

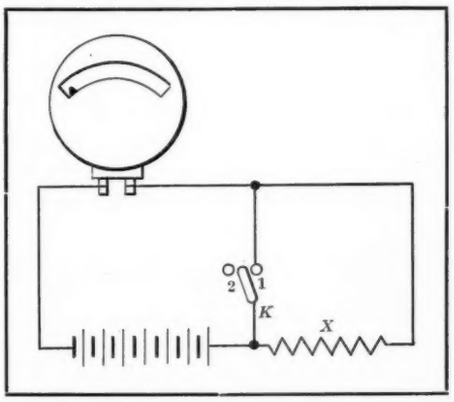

Fig. 2. Measurment of High Resistances.

For use as voltmeter; connect the instrument directly across the battery or line, of which the voltage is desired to be measured. The indication gives volt desired.

To test for ground; connect the instrument as shown in Fig. 1, with one side of the testing battery to ground. If the voltmeter gives a permanent deflection, a ground exists on the line. To find the value of the ground resistance, read the instrument, with key K open, call the deflection v, close key K and call the deflection V. The ground resistance is then $G = \frac{(V-v)R}{v}$ where R = the resistance of instrument.

In the measurement of high resistances; connect the resistance X to be measured as shown in Fig. 2 with a two way switch K. Put the switch on contact 1, which short circuits the resistance X, and read the instrument deflection, V. Then put the switch on position 2, which connects the resistance into the circuit, and read the deflection v. Then the resistance desired is $X = \frac{(V-v)R}{v}$ where R is the resistance of the instrument.

To measure low resistances, such as coils, lines, etc., connect

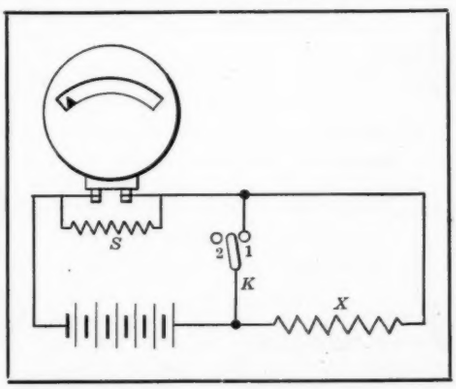

Fig. 3. Measuring Low Resistances.

the unknown resistance X as shown in Fig. 3. Shunt the voltmeter by a resistance S, so as to make the combined resistance of the instrument and the shunt some convenient value, say 200 ohms. The measurement is then made exactly as in the

Beck Bros.

Manufacturers of Electrical Testing and Measuring Apparatus

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Door Open

The "French" Folding Door Telephone Booth

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DOOR OPERATION:—One of the distinctive advantages of the "Folding Door" is that it can be both closed and opened by pulling on the handle. This feature, which is an important one from the booth user's standpoint, is possible only with this type of door.

THE "FRENCH" FOLDING DOOR means
Economy of Space—Perfect Ventilation—Silence in Operation

Write for booklet describing the advantages of the "Folding Door" Booth.

C. B. FRENCH CABINET COMPANY, Inc., Brooklyn, N. Y.

DISTRIBUTORS:

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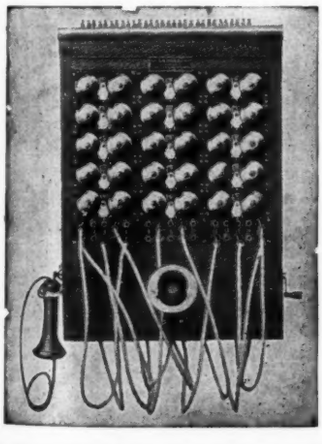
Houses in all principal cities

Door Closed



The Andrae Switchboard No. 110 is Troubleproof and Efficient

This is the perfect board for rural line use, It has all the superior features of our larger boards including a special heavy 5-bar switchboard generator, adjustable long distance transmitter, long distance receiver with operator's cord and plug, duplicate jacks with indicating bells. One extra pair of connecting cords and plugs furnished with each five bells. This is a very convenient and popular little board and is highly indorsed by managers of rural lines throughout the United States. It is first class in every respect and guaranteed electrically and mechanically perfect.

It is made to stand much hard use and to give economical and satisfactory service without any trouble. Write today for full particulars of the Andrae Switchboard No. 110.

JULIUS ANDRAE & SONS CO., 358 Broadway, Milwaukee, Wis.

L & N Lineman's Fault Finder

THE LEEDS & NORTHRUP CO.

4901 Stenton Avenue, PHILADELPHIA

¶ The **L. & N. Portable Testing Sets** are convenient instruments for the measurement of resistances and the location of faults. Our Lineman's Fault Finder is a simple, reliable and inexpensive instrument for these purposes. May be used for locating faults, crosses, opens, etc., on telegraph and telephone lines. Also for measuring conductor and insulation resistance.

May we send you details?

Electrical Measuring Instruments

Please tell the Advertiser you **saw his Announcement in TELEPHONY.**

case of the high resistance measurements, and the value is $X = \frac{200(V-v)}{v}$.

For measurement of the capacity of the line, connect as shown in Fig. 4, using a standard condenser C of about 1 mi-

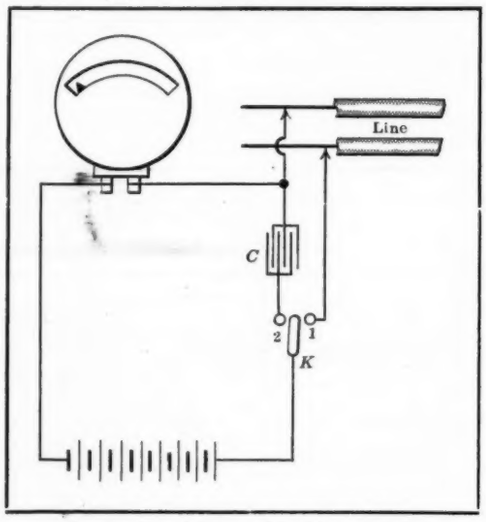


Fig. 5. To Measure Capacity of Line.

crofarad capacity. When the switch K is thrown to position 1, the voltmeter pointer is given a momentary deflection which is read. If the first deflection is V and the second v, then the capacity of the line is $\frac{V \times C}{v}$ microfarads, where C is the capacity of the standard condenser in microfarads.

The advantages and economies resulting from the use of the wire chief's voltmeters are such that they should be carefully investigated by managers and wire chiefs, providing such instruments are not already installed. Indeed, their accuracy, durability and general serviceability will prove a revelation to those who have never hitherto used them.

It is needless to caution prospective investigators that any instrument, upon which so much dependence is placed, should be of the highest grade of electrical and mechanical workmanship and design. It will be found that high grade instruments can be purchased at a reasonable price and it has usually proven to be poor economy to purchase any inferior grade of instrument for this character of service.

That the value of such instruments is not generally understood is testified to by the following extracts from a letter, which is typical of correspondence frequently received:

"We are more than pleased with the voltmeter (wire chief's), as we have already located grounds on our lines that we did not know existed.

I think that if you would use the wiring diagrams such as you sent me showing how simple it is to make the different tests—that more small exchanges would be equipped with a (wire chief's) voltmeter.

I supposed wire chief's instruments were intended only for large exchanges and for men who knew all about this class of instruments and testing, and not for rural exchanges."

The Weston company is always glad to furnish information regarding its instruments.

Kellogg Cords for Railway Service.

"Railway Telephone Cords" is the subject of an attractive illustrated six-page folder, tastefully printed, in two colors on buff color stock, which has just been issued by the Kellogg Switchboard & Supply Co.

The statement that "Kellogg Moisture Proof Cords are Waterproof—They last longer" is emphasized in the folder. Various tests and practical experiences with Kellogg moisture proof cords are given and illustrated graphically.

In this folder is given a code list of the more important Kellogg cards. A list of moisture proof cords "For competitor's equipment" with a return postal card for facilitating inquiries from interested recipients is also included.

The folders will be sent promptly on request to the Kellogg company.

Johns-Manville Exhibit at the New York Electrical Show.

The H. W. Johns-Manville Co., of New York, will have an unusually interesting exhibit this year at the New York Electrical Show, October 9 to 19.

The Audiffren-Singrun refrigerating machine, for which the H. W. Johns-Manville Co., is the sole selling agent, will undoubtedly attract much interest. This is a small, efficient and particularly simple refrigerating and ice making machine for use in residences, hospitals, clubs, etc. It is operated by ½ to 4 H. P. motor, depending upon the cooling or ice making capacity.

This refrigerating machine will be shown making ice and cooling a refrigerator without the intervention of ice. It will also be exhibited with the cold end running in the air and accumulating a sharp frost on its surface.

The company, well known in the lighting field for years past by reason of its J-M Linolite system of illumination, acquired during the early part of this year, the sole selling agency for the entire lighting products of L. P. Frink. Some of these improved types of lighting fixtures will be on exhibit.

The latest development in "Noark" service boxes for protection of power and lighting circuits will be shown. These boxes combine two devices in one, a cut-out and a switch, and operate, as their name implies, with "no arc" or flash.

There will also be shown J-M dry batteries, friction tape, and molded insulation such as molded mica, electrobestos and vulcabeston. The J. M. transite asbestos shingles and other building materials will be exhibited.

Reliable Electric Co. Adds to Its Telephone Specialties.

The Reliable Electric Co. has recently added Baby knife switches to its extensive telephone specialties, and they will undoubtedly find a large sale among the telephone trade.

The feature of this new Baby knife switch is that the metal parts, made of heavy copper assuring good contact, are mounted on a solid porcelain base. The handle is insulated by a composition material. The switches are manufactured in single and double pole, single or double throw styles.

The Reliable Electric Co. is also a large manufacturer of automobile switches and electric lamp connectors for all classes of work.

Ericsson "Society Notes."

"Mrs. Roger Kemp and her husband visited Niagara Falls one day a week or two ago. It wasn't a honeymoon either. Mr. Roger is lucky enough to sell Ericsson telephones in Washington (not D. C.). On the side, he is manager of the Washington Electric Supply Co., Spokane, Wash. Whenever we think of Mrs. Roger, we feel he doesn't really deserve all his good luck—it's too much for one man.

"And, speaking of Roger and luck generally, if he doesn't own all the business of the Washington Electric Supply Co. now he will, for he's just that lucky—and plucky."

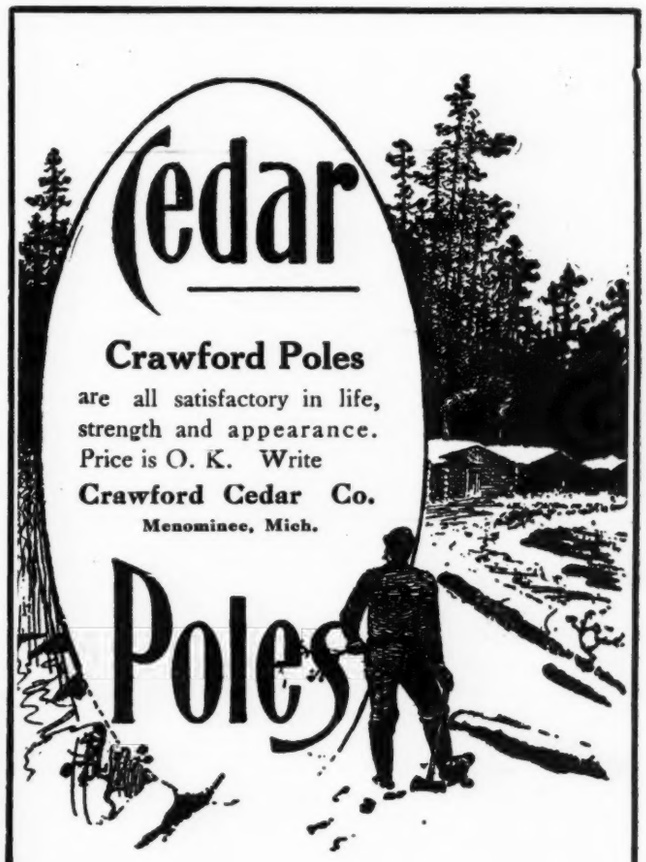
A Reliable Fire Pot for Soldering Purposes.

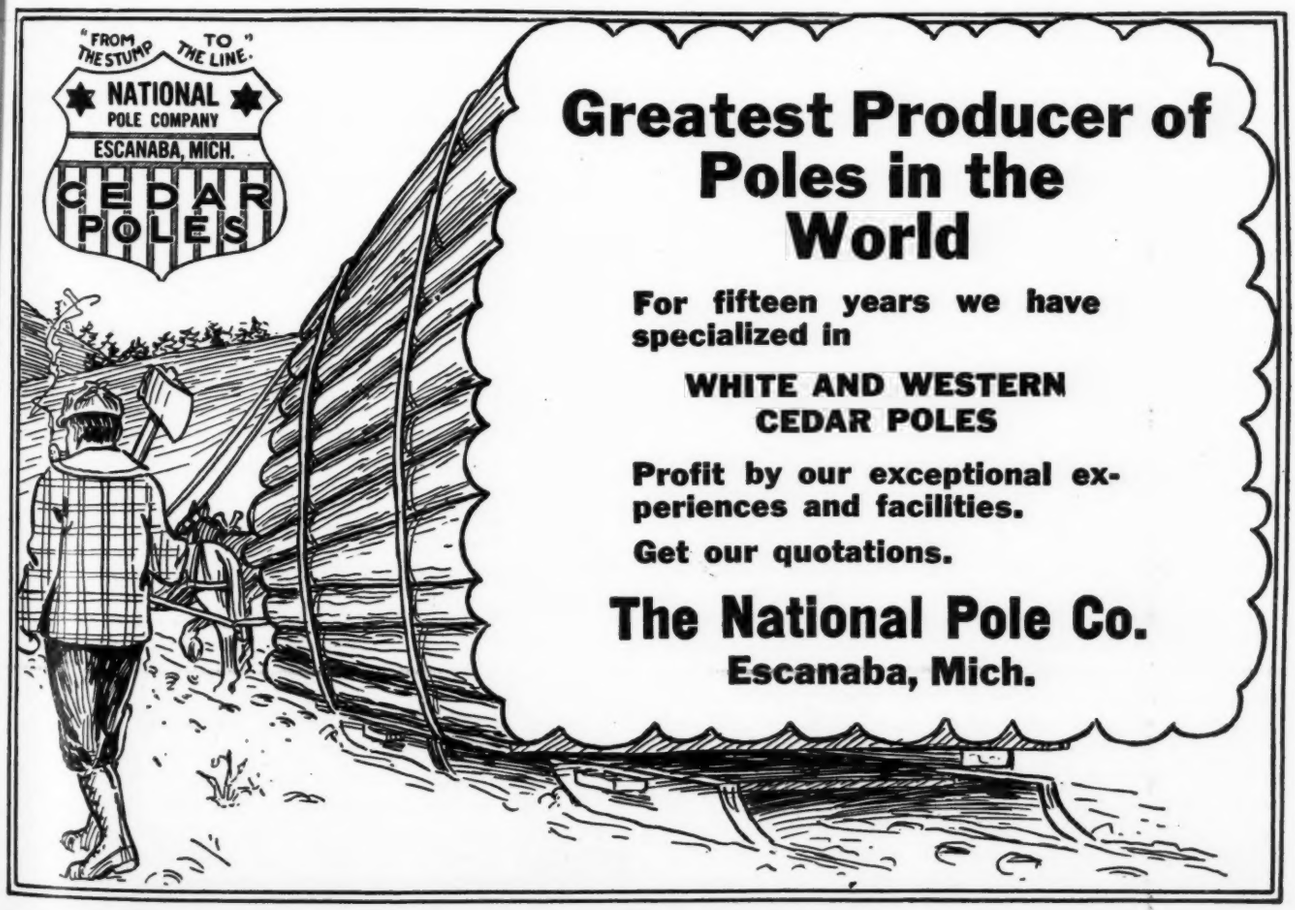
The city of Detroit has become noted for the large number of prominent manufacturing concerns that it has gathered unto itself and products of which are shipped to every civilized country on the globe.

Among the well known manufacturing firms of Detroit is

CEDAR
NORTHERN POLES WESTERN
We are pioneers in the butt-treatment of poles using Creo-Wood Preserver. Tell us.
THE VALENTINE-CLARK COMPANY
MINNEAPOLIS, MINN.
Western Sales Office: St. Maries, Idaho

NAUGLE
Pole & Tie Co.
5 South Wabash Ave.
Chicago, Illinois
The Trinity in Poles
"Service—
Price—
Quality."
POLES

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NATIONAL POLE COMPANY
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CEDAR POLES
Greatest Producer of Poles in the World
For fifteen years we have specialized in
WHITE AND WESTERN CEDAR POLES
Profit by our exceptional experiences and facilities.
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The National Pole Co.
Escanaba, Mich.

the Clayton & Lambert Mfg. Co., maker of the C. & L. line of fire pots and torches. This firm has been engaged in the manufacture of gasoline tools for over 24 years and its wide experience in this line, together with the business ability of its executives and a broad-minded business policy toward its customers, has enabled it to build up a large clientage.

The No. 1 fire pot included in the line made by this firm

The No. 1. C. & L. Fire Pot.

is said to be one of the best utility gasoline tools ever placed upon the market. The round tank base is constructed of heavy galvanized iron, thoroughly braced to withstand hard usage. It is fitted with a patented automatic brass air pump, in the base of which is embodied a double spring automatic check valve, by means of which air pressure is quickly and easily obtained and insured constantly. The burner of this torch is of flat construction and produces a pure blue flame which burns with intense heat and which is not affected by wind or cold. The top section is constructed of heavy gage iron and is large enough to accommodate 12-lb. coppers while heating a kettle of lead at the same time.

A Useful and Unique Data Sheet.

The American Conduit Manufacturing Co., Pittsburgh, Pa., has published recently a most unique and enduring form of insert for a standard data book for distribution to the electrical industry. It is in the shape of a heavy celluloid card six by nine inches, perforated in three places for binding, and having complete information with regard to rigid conduit prices, net prices per 100 feet at various discounts, price of elbows of different dimensions and radii, and net price per hundred for couplings. This information in this particular form is highly valuable, and contractors, supply men and engineers all over the country are making constant inquiries for copies.

Book Review.

WIRELESS TELEGRAPHY AND WIRELESS TELEPHONY.—By Chas. G. Ashley and Chas. B. Haywood. Published by the American School of Correspondence, Chicago; 141 pages with illustrations. Price $1.

The authors have set forth in an interesting and attractive manner, the history and principles of the methods for transmitting intelligence without the use of wires. It contains no higher mathematics and is written in a manner that is understandable by the lay reader or the amateur wireless enthusiast.

In the main part of the book is taken up in logical manner the early history of the wireless art, the fundamental principles involved and descriptions of the various systems in commercial use. Wireless telephony from the first attempts to the methods and apparatus of the present day is taken up in detail. The final chapter deals with the application of wireless to aeronautics.

It will prove of interest and value to the average reader desirous of gaining an insight of the underlying facts of modern wireless transmission as it is one of the most satisfying expositions on that subject which has been thus far presented.

Paragraphs.

THE CARBO STEEL POST CO., of Chicago Heights, Ill., manufacturer of Carbo patented steel poles, has recently opened an office at 30 Church street, New York, under the management of Halbert P. Hill. A Western office has also been established in the Delta Building, Los Angeles, Cal., in charge of G. W. Corey.

THE ROME WIRE CO., of Rome, N. Y., continues its series of pretty girl calendars with the October issue of its popular postal card desk calendar. The October girl maintains the high standard set by the company in the calendar as well as in the wire line.

"PHONEY BILL" is shown on the October blotter calendar of the Stromberg-Carlson Telephone Mfg. Co., regarding a big red billboard. He is greatly interested in the poster which tells of the "Good Signs" of prosperity. After reading them, he comments that "Now is the time to send us your orders."

THE AUTOMATIC ELECTRIC CO., of Chicago, has issued a booklet entitled "The Automatic Telephone in Great Britain." It tells of the investigations which the engineers of the British government made of the telephone systems in America and of the trial installations that were ordered and which were followed by an order for automatic apparatus for an installation of 6,800 lines in Leeds. The booklet contains extracts from the principal British newspapers which indicate that the attitude of the public is one of unqualified approval of both the system and the service.

THE DEATH OF ALFRED F. MOORE, Philadelphia, which has been recorded in these columns, will bring about no change in the firm name, or the general conduct of the business. This will be under the management of Antoine Bournonville, who has been actively associated with Mr. Moore in the management of the business for thirty-five years. Mr. Moore had gathered around him an able force of assistants and the personnel of the sales force, manufacturing departments and agencies will remain unaltered, the same efficient service being rendered as heretofore.

THE SPECIALTY DEVICE CO., of Cincinnati, Ohio, reports the largest month's business during September it has had since it started to specialize in telephone lines, nearly two years ago. This company has made rapid progress, due to the Bierce specialties, which now include an anchor, cable roller and cable sleeve. Orders for several thousand anchors were closed last month. Mr. Bierce is a practical telephone man and it is out of his understanding of the wants of telephone construction that his various specialties have been produced. Mr. Bierce informed a member of TELEPHONY's staff recently that he had an important announcement to make in the near future, which would likely prove of interest to telephone men. This company solicits correspondence and inquiries in regard to its specialties.

INTERNATIONAL RAILOPHONES, LIMITED, Birmingham, England, has issued a booklet, describing the new "KK" detector. This device was developed by H. Von Kramer and Dr. Gisbert Kapp, in connection with the research work that resulted in the invention of the Railophone system. It is a highly sensitve alternating current relay, which is capable of responding to currents as low as 0.0002 ampere flowing under an electromotive force of about 0.02 volt at a frequency of 100 cycles per second. Although the instrument was devised particularly for use in the receiving circuit of the Railophone, it has been found very serviceable in a great variety of other circuits for detecting minute alternating currents for which the ordinary telegraphic relays are not sufficiently sensitive.

WHITE CEDAR POLES

We handle just the poles for your purposes—the kind that you can depend upon to give service.

We are producers of poles—not jobbers. Consequently reasonable prices.

Let us quote you on your next order.

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We Produce Our **POLES** From Our Own Stumpage

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Let Us Quote You — We Have All Sizes — Any Amount

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TRI-STATE CEDAR COMPANY
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YELLOW PINE CROSS ARMS

Ship in any Quantity. Standard and Special Sizes.

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QUALITY? Idaho, Michigan and Canadian Cedar. The Best that grow.
PRICES? Remarkably reasonable!
SERVICE? Immediate shipments—any quantity! Poles in *stock* We produce our own.

No matter where you are, our yard locations and shipping facilities make it possible to reach you in a hurry.

THE F. BISSELL COMPANY, Toledo, Ohio.

CEDAR POLES

We have a fine lot of poles.
Our poles are strong and tough—the kind you need for long service.

LET US SEND QUOTATIONS TODAY

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POLES OF STERLING QUALITY

Oldest Cedar Pole Firm in Business Producers for 32 Years

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1880 MONROE, MICHIGAN 1912

White Cedar Poles

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Oldest in the business.

POLES *and* **CROSS ARMS**

Prompt Shipments
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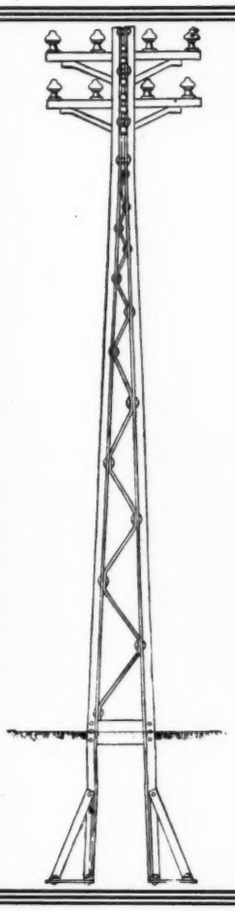
Established 1862 CHICAGO



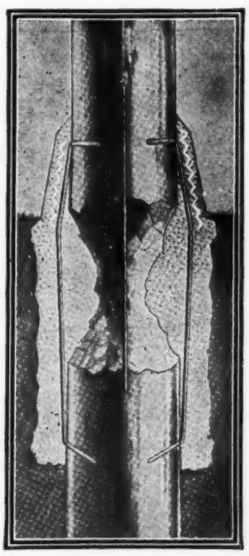
Before You Buy Another Pole — Learn About Carbo Steel Poles

Many tests have proven that they are easily best for telephone use. Carbo Steel Poles are cheaper than wooden poles in first cost, their maintenance is about one per cent a year. Compare this with wood at 7½ per cent. They last fifty years and still have a good scrap value; treated wood lasts but twenty years. Carbo Steel Poles stand the most severe strains of wind, ice and heavy lines. They haven't the excessive weight and size that makes wooden poles subject to frequent failures.

Carbo Steel Poles are strong, light and inexpensive. It is worth a lot to you to learn about them now.

CARBO STEEL POST CO.
Chicago Heights, Ill.

H. P. HILL, 30 Church St., New York City
S. W. COREY, Delta Bldg., Los Angeles, Cal.



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The Cost Averages About One-Third Your Renewal Cost

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Legal Cases and Decisions

By A. H. McMillan

Some Questions of Cable Construction.

"Will you kindly advise us on certain points of law in regard to the putting up of our wires and cables in the village of F——? How far above or below the other party's wires will our wires or cables have to be strung? Can we string our cable right under, within a few inches of the other party's open wires, and can we run the tops of our poles in between the other party's wires if the village council will allow us to do so, the other party having no franchise at all?

If our franchise calls for a clearance of 24 feet under our cables or open wires, would it be advisable for us to run wires or cables within a less clearance, if the present council did not object? If our articles of incorporation state that our liabilities shall not at any time exceed the sum of 20 per cent. of the paid up stock, would that mean net liabilities after deducting our available assets, such as cash on hand and supplies and construction material?

We were up in F—— recently and found that in order to go under the other party's open wires and make a clearance of 24 feet, it would be necessary for the council to compel the other party to raise its wire along certain streets, which the council agreed to do to make room for our cable. Can the council compel the other party to so raise the wires?"

Your wires should be strung far enough below or above the wires of the other party so as to avoid all danger and interference. The proper method of construction is, primarily, a question of practical mechanics and one with which law has but little to do. The distance that should be left between adjacent wires depends upon the two systems, taking into consideration the facts and circumstances in each case. The only general rule which can be laid down, is that the distance must be such as to be safe and prevent interference between the wires under the circumstances of each case. McMillan on Telephone Law, Sec. 151.

You would have no right to string your cable a few inches under the open wires of the other party. Neither would you have the right to run the tops of your poles up between the other party's wires, even with the permission of the village council. The fact that the other party has no franchise would not authorize you to do any damage or injury to the property, and you might do damage by such construction.

If your franchise calls for a clearance of 24 feet under your cables or open wires, it would not be advisable to use a less clearance, even with the consent of the council. The reason for this is that, in case any one was injured by your lack of clearance, you would be liable even though the council permitted the clearance.

Our construction of your articles of incorporation requiring that your liabilities shall not at any time exceed the sum of 20 per cent. of the paid up stock, is that it means gross liabilities. Any other construction would be uncertain, owing to the uncertain value of assets, which often shrink astonishingly when they come to be sold.

The council has the right to compel the other party to raise his wires where they deem advisable. The council can impose any police regulations it sees fit.

Estoppel to Deny Authority.

A mortgage was given on the franchises, easements and entire property, both real and personal, of a telephone company. The board of directors did not authorize the mortgage, but it purported to be executed on behalf of the company by its president and its secretary, and the acknowledgment recited that it was signed and sealed on behalf of the corporation by authority of its board of directors. The company had power to borrow money or sell its bonds and give a mortgage on its property to secure the debt. The proceeds of the mortgage were actually received and the money used for the purposes of the company. One of the directors of the telephone company was president of the bank which took the mortgage.

On the attempted foreclosure of the mortgage, it was contended in behalf of the telephone company, that the mortgage was invalid because not authorized by the board of directors. The court would not permit such a defense, holding that the telephone company was estopped from asserting it and that the mortgagee had no notice of the defect.

The notes or bonds of the company secured by the mortgage bore interest not to exceed 6 per cent. The bonds or notes were sold at less than their par value and the result was that the company paid more than the usual lawful rate of interest. The telephone company on the foreclosure raised the defense of usury. The laws of Minnesota, which was the state where the transactions took place, contained the following provision:

"Telegraph and telephone companies may mortgage or execute deeds of trust of the whole or any part of their property and franchises to secure money borrowed by them for the construction and equipment of their lines and properties and for other corporate purposes, and issue their corporate bonds in sums of not less than five hundred dollars, secured by their mortgages or deeds, and if payable to bearer negotiable by delivery, bearing interest at the rate of not exceeding six per cent. per annum, and convertible into stock or not as may be deemed expedient, may sell them at such prices as they may deem proper; and if said bonds shall be sold below their normal or par value, they shall be valid and binding on the company, and no plea of usury shall be put in by or allowed to said company in any suit thereon." (R. L. 1905, Sec. 2902.)

The court held that this statute applied to the case, and says that its intent was clear—to enable the telephone companies to borrow money without the chance to repudiate their obligations on the plea of usury. In effect, then, the court held that the telephone company might under this section pay whatever rate of interest it wished.

The telephone plant was an integer and it appeared that the real estate could not be sold separately from the property without greatly impairing the value of the whole to the detriment of all concerned. Under such circumstances it was held that the sale of the property as an entirety without right of redemption as to the real estate was legal, notwithstanding the statute giving a right of redemption from foreclosure of sales of mortgaged real estate. The property that the telephone company contended was real estate was its franchises and easements. The court did not deem it necessary to decide whether such franchises or easements were real or personal property. Clearwater County State Bank vs. Bagley-Ogema Telephone Co., 133 Northwestern, 91.

Liability for Where Subscriber Built and Owned Wire.

The North Arkansas Telephone Co. owned and operated a telephone line within the corporate limits of Fayetteville, Ark. W. L. Stuckey, who lived four or five miles out in the country, applied to the company to have the telephone installed in his house. It was agreed that he should construct a telephone line from his residence to a point at the corporate limits of the city. The telephone company would then connect his line with its wire; install a telephone in his residence, and give him telephone service at the same rates it charged city subscribers. This agreement was carried out. No inspection of the line was made either by him or the company.

When he could not get communication with the central office, or whenever any of his neighbors notified him that the line was down, he reported that fact to the company. It would send a man out to repair the line, when the lineman was not engaged in the company's business in the city, but the company always waited until the man could find an idle interval. The company did the same with other rural subscribers whose repairs were made at the cost of the subscriber.

An action was brought against the company and Stuckey for injury received by a traveler, who claimed to have been hurt by striking the wire, when it was negligently allowed to sag too low across the highway. The telephone company contended that it did not own or control the telephone line which injured the traveler. The court held that the wire was constructed and used for the joint benefit of the company and Stuckey. Hence, they both were joint wrongdoers and were properly joined in the action. Judgment was obtained against them both. North Arkansas Telephone Co. vs. Peters, 148 Southwestern, 273.

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POLES

SERVICE

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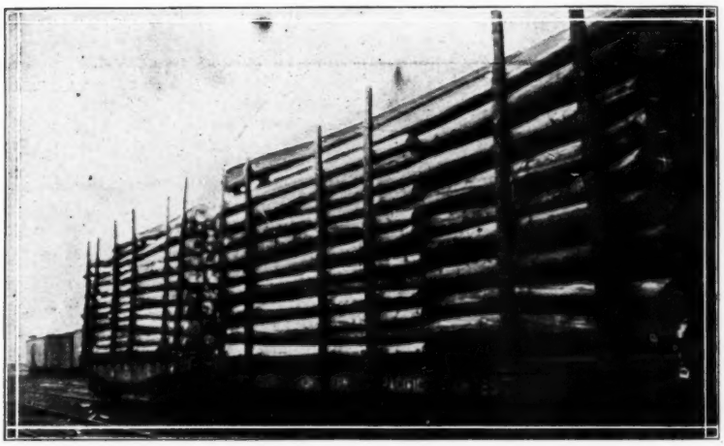

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Nothing to Equal This in New England

Rooms with private baths for **$1.50** per day and up; suites of two rooms and bath for **$4.00** per day and up.

Dining Room and Cafe First Class. European Plan.

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Stone floors; nothing wood but the doors.
Equipped with its own Sanitary Vacuum Cleaning Plant.

Strictly a Temperance Hotel *Send for Booklet*

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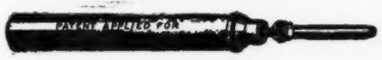

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Personal.

ARCHIBALD WRAY, for four and a half years with the Kellogg Switchboard & Supply Co., Chicago, as railway sales engineer, on October 1, accepted a position in the telegraph department of the Rock Island road. Railway superintendents of telegraph and telephone throughout the country will be interested in this announcement, knowing and appreciating Mr. Wray as a thoroughly practical and conscientious salesman. As a salesman he will be missed greatly, as he combined the rare faculties of absolute frankness and sincerity with a thorough understanding of his subject.

Mr. Wray is to be congratulated upon entering this interesting field. He is one of the originators of train dispatching and is responsible for a great deal of its present day efficiency. With Mr. Cummings and Mr. Kick, he originated the typewriter telegraph. He has designed several practical dispatching systems and his long and successful experience in railway telegraphy and telephony places him foremost in this interesting work.

His first telephone experience was with the Chicago Telephone Co., where he remained four years, thence going to the American Telephone & Telegraph Co., and four years later, holding the position of assistant district inspector. His first work in the telephone business was as assistant installer.

Mr. Wray was five years with the Burlington in the telegraph and telephone department, as railway telephone inspector.

W J. O'HEA, of Buffalo, N. Y., has been elected district manager of the New York Telephone Co., in Rochester. William G. Barry, of St. Louis, will succeed him.

HARRY HACKETT, who has been manager of the Wisconsin Telephone Company's exchange at Washington, Wis., for the past two years, has resigned his position.

HERBERT T. JEFFERY, who has been manager of the Paducah branch of the Paducah Home Telephone Co., Paducah, Ky., for several years, has been promoted to the position of district manager. C. P. Short, of Cynthiana, Ky., manager of the Central Telephone Co., has been appointed to succeed him.

DUGALD C. JACKSON, head of the department of electrical engineering of the Massachusetts Institute of Technology, has gone to England at the request of the British government, having been granted leave of absence until January 1. Over a year ago, when the English post office department considered the purchase of the National telephone system it determined to call upon one authority outside the country to work with the English commission, and its choice fell upon Professor Jackson. He has been in consultation with the English government officials two or three times and is now called to England for the final work of appraisal.

Another American expert in the matter is Hammond V. Hayes, a graduate of the Massachusetts Institute of Technology, and an electrical engineer, of Boston. Mr. Hayes will represent the National company.

Obituary.

ALFRED F. MOORE, widely known wire manufacturer of Philadelphia, died at his home in that city on September 18, as briefly mentioned in TELEPHONY. Mr. Moore, who was in the fifty-ninth year of his age at the time of his death, was a native of Philadelphia, and a member of one of the city's oldest and most representative families. The business of which he was the active directing head, was established by his grandfather nearly a century ago.

Mr. Moore began his business career in 1870, when he entered the employ of the firm of Joseph Moore & Son, composed of his father and brother. Later he was admitted to partnership, the name being changed to Joseph Moore & Sons. In 1878, some time after the decease of the other partners, the name of the concern was changed to, and still remains, Alfred F. Moore. After this change, tremendous strides were made in electrical progress, and Mr. Moore became a pioneer in the manufacture of all kinds of insulated wire and flexible cords for the new applications of electricity.

He had been prominently identified with the activities of the Union League, of Philadelphia, having been a member since 1884, and vice-president of the club in 1901. He was also a member of the Bachelors Barge Club. The commercial institutions with which he was connected were many. He was at the time of his death, a director in the Franklin Fire Insurance Co., the Second and Third Streets Passenger Railway Co., president and trustee of the Northern Liberties Gas Co., and vice-president and director of the County Fire Insurance Co. He was formerly a member of the board of directors of the House of Refuge. He was a director in the National Bank of Northern Liberties, of which his brother, Joseph Moore, is president.

New Companies.

CARLINVILLE, ILL.—The Macoupin Co. Telephone Co. has been incorporated by G. B. Carey, C. B. Cheadle and T. A. Cheadle. The capital stock is $5,000.

CERRO GORDO, ILL.—The Piatt Co. Mutual Telephone Co. has been chartered, with $10,000 capital stock. The incorporators are: Frenk Etnoyer, G. Fulke, Frank Wolfe.

COLCHESTER, ILL.—The Colchester Farmers Telephone Co. has been incorporated with $6,000 capital stock. The incorporators are: L. A. Null, James M. Clayton, Frank Stump and T. B. Switzer.

CLAY CITY, KY.—John D. Delrich and others are establishing a telephone system in Clay City. The company will build long distance lines from Clay City via Stanton and Winchester to Mt. Sterling.

CHAVIES, KY.—The Chavies Independent Telephone Co. is being organized here by W. G. Combs and others. Lines will be built to Viper and Imlay.

HARRODSBURG, KY.—The Harrodsburg Home Telephone Co. has been organized here with a capital stock of $3,000.

CLIFFSIDE, N. C.—The Cliffside Telephone Co. has been chartered, with $10,000 capital stock. The incorporators are R. R. Haynes, Z. O. Jenkens and others.

ALBANY, N. Y.—The Phelps Mutual Telephone Co. has been chartered with $9,000 capital stock. The incorporators are: H. F. Flint, J. F. Kavanaugh and F. R. Walker.

Construction.

POCAHONTAS, ARK.—The Farmers Mutual Telephone Co. held its annual meeting recently and elected the following officers: W. Rush, Ravender Springs, president; R. L. Foster, vice-president; Joseph DeClerk, Pocahontas, secretary; L. C. Haynes, Pocahontas, treasurer.

RUSSELL, KY.—The Russell Home Telephone Co., recently incorporated, will construct a long distance line from Russell to Olive Hill and Owingsville. H. K. Dixon is manager

WHITESBURG, KY.—Adam Q. Ramey and others, of this city, are preparing to build an Independent telephone line from Whitesburg, via Polly, Colson and Pine Top, to Hindman, approximately twenty-six miles.

FOWLER, COLO.—The Omer Telephone Co. will extend its lines approximately forty miles.

VERNON, B. C., CANADA.—The Okanogan Telephone Co. contemplates the expenditure of $200,000 for construction in Vernon and vicinity.

PARIS, FRANCE.—Telephone facilities are being actively installed throughout France, the consuls-general of the several departments having voted sums of money for the purpose as follows: In the department of Aisne, 550,000 francs; Vosges, 485,000 francs; Deux-Sèvres, 101,500 francs; Aube, 100,000 francs; Puy-de-Dôme, 80,000 francs; Eure, 44,610 francs; and Yonne, 46,530 francs.

Financial.

BEATTYVILLE, KY.—The Lee County Telephone Co., which was recently organized, has increased its capital stock from $4,000 to $5,000. Both local and long distance lines are being built. The main line will run from Beattyville to Jackson.

HELLERTOWN, PA.—The Lower Saucon Telephone Co. has increased its debt limit from $15,000 to $25,000.